

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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Personal—and "FLIGHT" at One Penny.

It is just about three years and three months ago since, by reason of the aeronautical industry being frowned down by the professional politician, as exemplified in the Government of the day, that very struggling industry was well-nigh strangled out of existence, the proprietors of "FLIGHT" found it advisable to raise the sale price from one penny to threepence per week. No one regretted the step more than those associated with the paper. But so successful was "FLIGHT" that its very success brought about the increase in the price. Had the public been less profuse in their appreciation of the little publication, the loss from selling the paper at one penny might have been submitted to. But as the circulation insisted upon going up, not hundreds but thousands a week, without unfortunately the necessary advertisement revenue to balance the account, the position necessitated one of two things, either to limit the number printed, or ask the public to pay a price more in keeping with the actual cost of production. It may at first glance appear strange to the uninitiated, but the more you sell, the more you lose. And the reason is not far to seek. It costs very considerably more for paper, &c., to produce a journal like "FLIGHT" than the price obtained for it at a penny. Therefore the greater the circulation success, the greater the loss. Times have since changed, and it is gratifying to know that the aviation industry is now so substantially established as to justify the proprietors of "FLIGHT," the first Aero weekly ever published in the world, in returning to the original price of one penny. This will take effect as from the next issue, dated January 6th, which commences the volume for 1916—the eighth year of publication. In no way will the quality and character of "FLIGHT" be reduced. If anything, the reverse will be the case. As we have every reason to anticipate a very heavy demand for the forthcoming numbers, we would ask all those desirous of ensuring a copy, to place their orders firmly with either bookstall or newsagent most convenient to themselves, or by communicating direct with the publishers at 44, St. Martin's Lane, W.C. Not only will this method prevent disappointment, but it will have the merit of assisting the proprietors in their work, and therefore be helping the cause forward, which we feel all readers of "FLIGHT" have at heart. By thus preventing waste of surplus copies, value can be increased in other directions, and with the nightmare of shortage of printing paper looming larger and larger in the near future, this economy in material is all the more important and helpful to one and all, in order that there may be enough to go round.

We take this opportunity of offering our sincere thanks to every individual supporter in the past of "FLIGHT," whether as a reader or as a commercial supporter, coupled with the hope of still further cementing in the future the friendship which has always existed between the Editorial Staff and those to whom the paper directly appeals. We have endeavoured to conduct our pages with absolute and dignified impartiality, and we hope and believe we have succeeded. As in the past, so in the future, it will be our study to handle with discretion all that pertains to the benefit of the Industry, placing blame where we have clear reason to believe that blame applies, and praising proportionately such matters as appear to deserve commendation, whether the source be official, the sporting side or pertaining to the industrial section. In this our readers can assist us by communicating their views, whether they be grievances or the reverse. We always lend a sympathetic ear to other men's opinions, wheresoever they may emanate.

Therefore with this, the last issue of 1915 and of Volume VII, we offer sincere and hearty greeting to all of us

HAPPY AND PROSPEROUS A NEW YEAR

as present circumstances will permit, with the hope that long before the close of the 1916 Volume, Peace may once more reign throughout this much-disturbed globe of ours.

EDITORIAL

The Passing of 1915.

With this issue of "FLIGHT," which concludes the seventh yearly volume, we propose in accordance with our custom to take a brief glance backward at the outstanding events which have happened, to make the past year a momentous one, not only in the history of aviation but for the world. Unfortunately, from the point of view of aeronautics, it is impossible to fully envision all the progress made in 1915, for the simple reason that for military reasons, much that has been accomplished must remain in the background for the present. A moment's thought, however, over the doings of the past twelve months will help to recall that as regards aircraft, both of the lighter-than-air and heavier-than-air varieties, much has been learnt which will presently, when peace shall once more hold sway in the world, be available for the furtherance of the art to the benefit and pleasure of mankind generally.

The British Air Services.

Not the least marvellous example of the way the armed forces of the Crown have been multiplied as necessity has arisen, is the enormous expansion of the Royal Naval Air Service and the Royal Flying Corps. In both cases the year which is just closing has witnessed very great changes. In January the Royal Flying Corps was reorganised on a very much enlarged basis, being split up in brigades or wings. Then in September came the rearrangement of the Royal Naval Air Services with a flag officer—Rear-Admiral Vaughan-Lee—at the head, the services of Commodore Murray Sueter, who has done such brilliant work in connection with naval aeronautics, being retained as Superintendent of Aircraft Construction.

Although the pages of "FLIGHT" record week by week something of the work of both branches of the Flying Services, it must be remembered that the spectacular incidents which obtain publicity, form but a tiny fraction of the whole. The daily round of patrol and reconnaissance work does not lend itself easily to picturesque laudation, the veil only being lifted now and again when a pilot's name appears in the list of honours awarded. Of the several massed raids carried out by the Royal Naval Air Services those with the German submarine works at Zeebrugge, &c., as their objective were noteworthy on account of the number of machines engaged upon each trip, on one occasion as many as forty taking part.

In support of the operations in the Dardanelles the Royal Naval Air Service has lent valuable assistance both with aeroplanes and other types of aircraft. Another glimpse at the work of Naval Aviators was also vouchsafed by the publication of Rear-Admiral King Hall's despatch dealing with the destruction of the Königsberg, in which, after detailing the work of the aviators in a treacherous and unfamiliar climate, he said, "I will sum up by saying that the flying officers, one and all, have earned my highest commendation." Similarly with regard to the Royal Flying Corps it may be recalled that Sir John French in his despatch dated June 15th, referred to the part taken by the R.F.C. in the operations described, as invaluable, and went on to say that the Corps was becoming more and more an indispensable factor in combined operations. In his subsequent despatch Sir John French further dwelt on this subject.

Recognising the great and growing demand for pilots, in June last "FLIGHT" drew attention to the fact that there was in the non commissioned ranks of the R.F.C. a very valuable amount of unexploited ground upon which

COMMENT.

to draw for this purpose. A few weeks later in the House of Commons, Mr. Tennant, the Under-Secretary of State for War, stated that some non-commissioned officers had been trained as pilots and more would be trained as occasion arose.

The Roll of Honour.

Although in the early stages of the war the British Flying Services escaped with remarkably few casualties, the great increase in the amount of work which has had to be carried out since then has been reflected by the number of officers and men whose names have appeared in the casualty lists week by week, although, comparatively speaking, these still remain small.

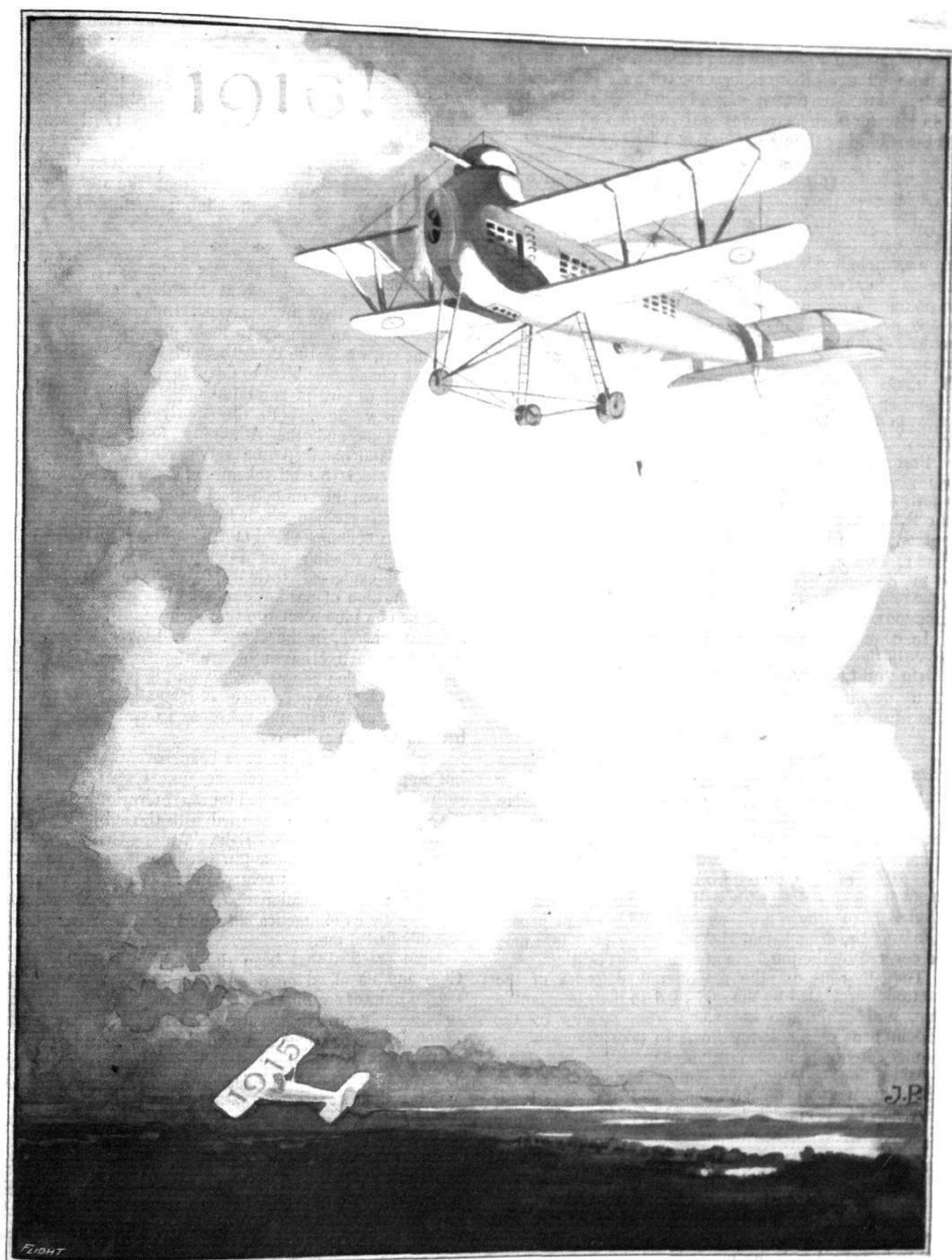
Among those who have laid down their lives in the Service of the Country have been three out of five pilots who have won the Victoria Cross, Lieut. Rhodes-Moorhouse and Capt. Liddell succumbing to wounds received while on duty and Lieut. Warneford meeting a tragic death while testing a new machine. Lieut. Insall, the latest to be awarded the Victoria Cross for his air work, has also been reported as missing.

New Types of Machines.

Time has clearly demonstrated that various types of machines are required for different purposes. For reasons already stated it is impossible to specify details of lessons learned in this connection, but attention may be drawn to the fact that splendid work has been obtained during the past months from twin-engined and other large machines—carrying armaments and armour—in the French service, while on several occasions the Russian giant biplanes have been able to put in effective work at the rear of the German lines in the East. Germany, too, has not been idle although comparatively little has been heard of the fearsome "battle-planes," which according to tales filtering through neutral countries are to put everything else navigating the air out of action.

Dirigibles.

The piratical raids by Zeppelins have more or less overshadowed the legitimate work of lighter-than-air craft during the year, and many, basing their opinion on the Huns' deeds of "valour," may incline to the opinion that the failure of the gasbag is more certain than ever. When the history of the war comes to be fully written, however, it is more than likely that the really valuable work of a purely military nature which has been accomplished by airships will come as a surprise to the majority. For the present the tactics of our dirigibles must remain a closed book, but it may be accepted that after the war, airships will for certain purposes claim their definite position in the realms of the air. Both the French and Italian armies have utilised semi-rigid airships for dropping bombs on military centres, and both countries in their turn have suffered losses at the hands of the enemy. With regard to the Zeppelins, there has been most convincing demonstration of their ability to travel long distances and scatter bombs at various points in these islands. Although on most occasions they have succeeded in returning to their harbours, it is hardly necessary to recall that one on its way home was accounted for by the late Lieut. Warneford, who was awarded the V.C. for his exploit, while another was disabled and later destroyed at Ostend by bombs. The vulnerability of these giant craft was emphasised last February by the wreck of the L3 and L4 within a short time of each other, off the Danish coast. Several others have been destroyed, some



The gliding into the past of 1915 and the rising of 1916, with promise of eclipsing the world's aeronautical efforts.
From an original drawing by J. Prochazka.

by bombs dropped on the housing sheds, as in the raids on Brussels and Friedrichshafen, while from time to time there have been persistent and credible rumours of others suffering a like fate from accident. While we may well hope that all these reports are true, sight should not be lost of the fact that it might be to the interest of the wily Hun for obvious reasons to arrange for rumours such as these to filter through neutral countries to England.

Raiding— Allied and Otherwise.

Unfortunately, it has to be recorded that the enemy during the past year has contrived to reach these shores upon many occasions and drop bombs at various points, including the Metropolitan area, and although the sum-total of military damage which has been effected is practically nil, it is regrettable that there have been many innocent victims of these attentions. Since the middle of the year the Government adopted a suggestion strongly urged for months previously in these columns. This was the prohibition of the publication of details regarding the areas visited by hostile aircraft and the damage done, thus depriving the enemy of the opportunity of being able to check his calculations.

Both the R.N.A.S. and the R.F.C. have carried out many successful raids during the year, confining their efforts however to objects of military significance. Thus the R.N.A.S. by their work at Zeebrugge have practically put an end to the construction of submarines there. The raid on Friedrichshafen last May also created havoc in the Zeppelin works. The efforts of the R.F.C. have been mainly directed to continual attacks on railway junctions, ammunition stores, magazines, &c.

In connection with bomb-dropping, mention may be made of the feats of Squadron Commander Bigsworth and Flight Sub-Lieut. Viney, the latter with a French officer, Lieut. de Sincay, who were responsible for the destruction of submarines off Ostend and Nieuport respectively.

Anti-Aircraft Insurance and Defence.

One result of the raids on various places in England was to create a demand for insurance, and after a great deal of delay the Government introduced a scheme for the insurance of property against risk of damage by hostile aircraft—a scheme almost line for line as advocated in the pages of "FLIGHT" in the months commencing October, 1914. This, although the rates are as high as need be, has proved a big success, and a recent expansion was the arrangement by which small amounts may be covered by the purchase of vouchers at post offices.

The absurdity of the anti-aircraft defences of the Metropolis revealed by the raids, led to their re-organisation, and confidence has since been created by the appointment of Sir Percy Scott to take charge of the gunnery arrangements. Further changes are still under consideration by which the Anti-Aircraft Corps, which originally was an off-shoot of the Royal Naval Air Service, will pass under the control of the War Office.

The Royal Aero Club.

Quiet unostentatious but arduous and valuable work has been carried on by the Royal Aero Club during the past twelve months. This applies not only to the Club, as a society, but to the executive and to members individually, many have vied with one another in their efforts to render assistance to the country in this period of stress, as is evidenced by the list of members in the Club rooms, with a bewildering number of tiny Union Jacks placed against the name of each who is doing his "bit" on active service.

The establishing of the Flying Services Fund, following a suggestion by the Brothers Michelin, backed by them with a donation of £1,000, together with similar contributions from the Royal Aero Club, Flight Commander McClean and Mr. T. O. M. Sopwith, has enabled a sum well over £10,000 to be raised to date, the ten-thousand mark being reached by a thoughtful contribution by Sir Charles Cheers Wakefield on his becoming Lord Mayor of London for the current year of office.

From the official notices of the Royal Aero Club it should be noted with satisfaction that the number of pilots' certificates issued by the Club now number nearly 2,200.

General.

During the summer some flying displays were arranged at Hendon, reminding of more peaceful days in the past, thus affording the general public opportunity to make closer acquaintance with the art, which the Press throughout the world have found so popular a subject to dilate upon.

In order to give inventors an opportunity of putting forward new ideas, both the newly-formed Ministry of Munitions and the Admiralty formed Invention Bureaus, and obtained the services of scientists and experts in order that all schemes and devices submitted might be given the best consideration.

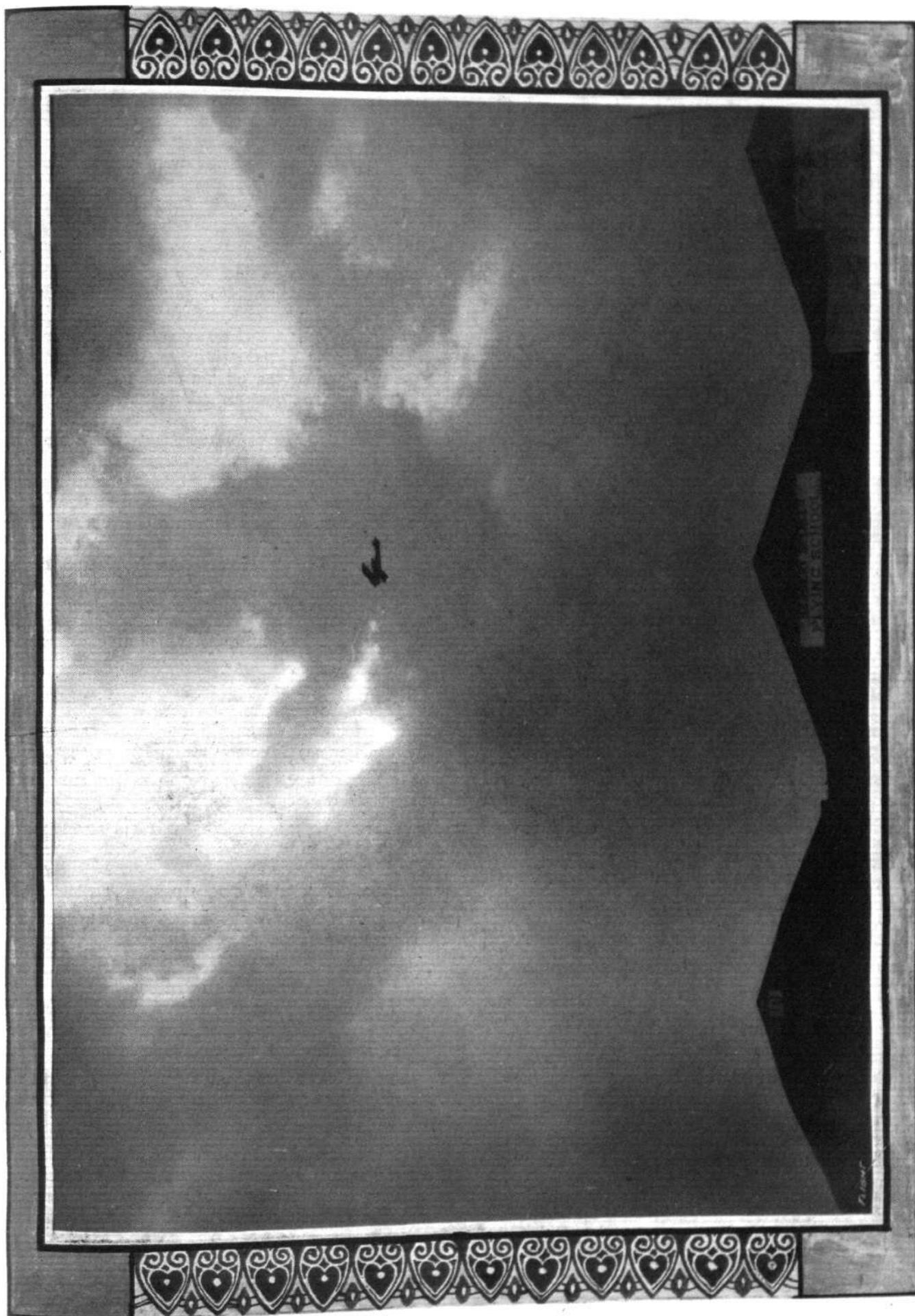
Another suggestion which has been urged for some time in the columns of "FLIGHT," and adopted by the Government, was the issue of the khaki armlets to those who have expressed their willingness to serve their country in time of need, the scheme being amplified by the issue of a blue armlet to those who enlist, under the deferred scheme, in the Navy. Mr. Lloyd George, on being appointed Minister of Munitions, early took in hand the question of war badges, and issued regulations which have had the good effect of relegating to oblivion the many unofficial and spurious badges which had been so much in evidence.

During the year there have been several well meant but impossible aviation schemes put forward, backed with the names of men well known in various walks of life other than those concerned with the subject which it has been sought to set right. Among them was the idea of building within a few weeks a fleet of 10,000 aeroplanes with which to carry out raids into Germany, but the mere publication of the idea was sufficient to demonstrate its impracticability, and this abortive effort speedily fizzled out.

More practical has been the work of the Overseas Club and its allied organisations, which has resulted in several units of scouting and fighting aircraft being added to the equipment of the flying services, the cost being borne by Britons living in the Colonies or in foreign countries. Five of these machines were christened by Queen Alexandra in July last, after which Her Majesty watched them depart from Farnborough for a destination "somewhere in France." This movement at least has afforded an outlet for patriotic help, in directions in which otherwise nothing might have resulted. Apart from these gifts the services have also been the recipients of several machines presented by the chiefs of India.

H. M. the King.

No review of the year would be complete without reference to the fact that H.M. the King has continued to take the most lively interest in the Flying Services, and on his several visits to the front the Royal Flying Corps has invariably been inspected with the greatest appreciation.



A reminiscence of Flight-Commander S. V. Sippe, D.S.O. (whose marriage was announced on December 8th), on the Bristol scout at Brocklands Aerodrome in the days that are gone.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

Russian.

Petrograd, Dec. 21st.

"Our aviators successfully bombarded the rear approaches to the enemy's positions in the Godutzycki Komay region, east of Svientziany, causing a panic among some convoys."

Petrograd, Dec. 22nd.

"In the region of Riga our artillery successfully cannonaded German aeroplanes and captive balloons."

"Our aviators again dropped bombs on enemy trains travelling towards Svientziany."

Petrograd, Dec. 25th.

"Our artillery likewise drove off an enemy aeroplane which was making for Riga."

Italian.

Rome, Dec. 22nd.

"In the Giudicaria Valley on the night of December 20th our artillery and aircraft by combined action bombarded with effect Fort Por of the Lardaro group. On December 21st the bombardment was renewed with success. Two enemy aeroplanes belonging to the aerial defence of the group, which went up in the course of the action, were attacked by us and forced to beat a retreat."

"On the Asiago plateau on December 21st an enemy aeroplane offered a mark for our artillery, and was forced to land on account of damage done to its engines. The pilot was taken prisoner."

Montenegrin.

Cettinje, Dec. 24th.

"Two enemy airplanes, one of them being German,

dropped four bombs on Scutari on December 23rd. Five civilians were killed and 16 women and children injured."

Cettinje, Dec. 25th.

"Yesterday morning Austrian aeroplanes threw two bombs on Nicochitch and five on Podgoritzza without any result. They subsequently flew over Scutari without dropping bombs."

Turkish.

Constantinople, Dec. 20th.

"We further shot down an enemy waterplane, which fell in the sea. We made the pilot and observer prisoners."

Constantinople, Dec. 26th.

"An enemy aeroplane was shot down near Bir-el-Sabe in Syria. We captured the pilot, a French captain, the Baron de Ceron. The observer, an English lieutenant, was dead."

Constantinople, Dec. 27th.

"Near Morto Liman on December 25th, one of our waterplanes made successful reconnoitring flights over the isle of Tenedos and the enemy's positions near Sedd-el-Bahr and hit with a bomb a torpedo-boat south of Sedd-el-Bahr."

Constantinople, Dec. 28th.

"On December 25th enemy airmen unsuccessfully dropped bombs in the neighbourhood of Galatkoj. We seized all the useful articles from enemy transport vessels wrecked on the coast at Buyuk Kemikli."

THE BRITISH AIR SERVICES.

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.

Royal Naval Air Service.

THE following appeared among the Admiralty announcements of the 21st inst. :—

C. J. Pyke promoted to Probationary Flight Sub-Lieutenant, temporary, with seniority of Dec. 20th, and appointed to "President," additional, for R.N.A.S.

Jean de Francia entered as Probationary Flight Sub-Lieutenant for temporary service, with seniority of Dec. 20th, and appointed to "President," additional, for R.N.A.S.

The following entries have been made :—W. E. Dommett, as Temporary Lieutenant (R.N.V.R.), with seniority of Dec. 15th, and appointed to "President," additional, for R.N.A.S.; and A. J. Collins, as Temporary Warrant Officer (2nd Grade), with seniority of Dec. 20th, and appointed to "President," additional.

The following appeared among the Admiralty announcements of the 22nd inst. :—

Surgeon J. H. B. Martin, M.B., M.A., to "President," additional for R.N.A.S.

Temporary Sub-Lieut. (R.N.V.R.) J. P. Elsdon, promoted to Temporary Lieutenant (R.N.V.R.), with seniority of Dec. 20th, and appointed to "President," additional for R.N.A.S.

Acting Sub-Lieut. (R.N.R.) A. Durston transferred to R.N.A.S. as Temporary Probationary Flight Sub-Lieutenant, with seniority of Dec. 21st, and appointed to "President," additional.

Chief Petty Officer W. A. Kingston promoted to Temporary Warrant Officer (2nd Grade), with seniority of December 21st, and appointed to "President," additional, for R.N.A.S.

H. G. Travers and L. A. Rees, both entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of Dec. 21st, and appointed to "President," additional, for R.N.A.S.

The undermentioned have been entered as Temporary Lieutenants (R.N.V.R.), with seniority of Dec. 21st, and appointed as follows :—G. C. Rhodes, F. Reynolds, and H. W. Radcliffe, all to "President," additional, for R.N.A.S., Dec. 28th; and G. Caird, to "President," for R.N.A.S.

A. H. Davies, entered as Temporary Warrant Officer (2nd Grade), with seniority of Nov. 21st, and appointed to "President," additional, for R.N.A.S., Dec. 28th.

The following appeared among the Admiralty announcements of the 24th inst. :—

Flight Sub-Lieut. R. Souray, to "President," additional, Dec. 23rd.

Temporary Lieut. (R.N.V.R.) W. Dod, to "President," additional, for R.N.A.S., Nov. 8th.

Air-Mechanic P. Bowsher, promoted to temporary Sub-Lieut. (R.N.V.R.), with seniority of Dec. 21st, and appointed to "President," additional, for R.N.A.S., for Observer's Duties.

The following entries have been made :—

Probationary Flight Sub-Lieutenants (temporary): G. S. Abbott and G. G. MacLennan, both with seniority of Nov. 8th and 11th respectively, and appointed to "President," additional, for R.N.A.S.

Temporary Lieutenants (R.N.V.R.): A. Robertson, with seniority of Dec. 23rd, and appointed to "President," additional, for Engineering Duties with R.N.A.S.; T. B. Meyer and E. A. Falconer, both with seniority of Dec. 23rd, and appointed to "President," additional, for R.N.A.S.

Temporary Sub-Lieutenant (R.N.V.R.): A. P. Reed, with seniority of Dec. 23rd, and appointed to "President," additional, for R.N.A.S.

C. J. H. Trutch granted a temporary commission as Sub-Lieutenant (R.N.V.R.), with seniority of Dec. 23rd, and appointed to "President," additional, for R.N.A.S.

The following appeared among the Admiralty announcements of the 27th inst. :—

The following have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of Dec. 24th, and appointed to "President," additional, for R.N.A.S.: S. Burton,

A. H. H. Gilligan, S. S. Benson, J. A. Yonge, P. E. Bayley, and L. A. Jones.

The following appeared among the Admiralty announcements of the 28th inst. :—

Lieut.-Com. G. Holmes, R.N.V.R., to "President," additional, for special service with the Air Department. To date Dec. 27th.

B. E. J. Vallings and Leading Mechanic R. J. C. Crouch granted temporary commissions as Sub-Lieutenants, R.N.V.R., and appointed to "President," additional, for R.N.A.S., for (E) duties. To date Dec. 27th and Dec. 25th respectively.

M. C. Wood and H. C. Nash entered as Temporary Probationary Flight Sub-Lieutenants, and appointed to "President," additional, for R.N.A.S. To date Dec. 6th.

Royal Flying Corps (Military Wing).

The following appeared in the *London Gazette* of the 21st inst. :—

Supplementary to Regular Corps.—Second Lieutenants confirmed in their rank: Frank E. Goodrich, Reginald A. Courtney, Henry J. C. Smith, Norman S. Percival, Thomas L. F. Burnett, Henry L. Conner, Charles G. Smith, Alfred W. Cott, Wilfred J. Hewitt, Ephraim W. Havers, William T. W. Wartnaby.

To be Second Lieutenants (on probation): John N. Mearns; Nov. 22nd, 1915. James C. Cunningham; Nov. 8th, 1915. Leonard J. Stuart; Dec. 8th, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 22nd inst. :—

Supplementary to Regular Corps.—Second Lieutenants (on probation) confirmed in their rank: Charles E. Holaway and Martin A. Shepstone.

Lieutenants Canadian Militia, to be Second Lieutenants (on probation); Nov. 20th, 1915: J. H. Ross, C. R. Duggan, W. R. C.

Dacosta, F. H. Whiteman, J. H. Firstbrook, A. M. Thomas, H. A. Wood, J. E. Rettie, W. W. Lang, L. C. Boyd, R. H. Crown, J. S. Beatty and J. C. Simpson.

To be Second Lieutenants (on probation): Arthur H. O'H. Wood; Nov. 7th, 1915. Nov. 20th, 1915: Edward G. Ryckman, Mowden M. Mowat, Arthur G. Knight, Robert T. Griffin, Goldwin L. Faulkner, D. Cushing and H. G. Smith.

The following appeared in a supplement to the *London Gazette* issued on the 23rd inst. :—

Supplementary to Regular Corps.—To be Second Lieutenants (on probation), Nov. 17th, 1915: H. Jones, George J. Williams, Chester S. Duffas, John W. Bailey; Nov. 22nd, 1915. Hyman Levy; Dec. 13th, 1915.

J. W. Jardine to be Second Lieutenant (on probation). Nov. 22nd.

Memoranda.—T. F. G. Strubell to be Temporary Second Lieutenant for duty with Royal Flying Corps. Nov. 9th.

The following appeared in the *London Gazette* issued on the 24th inst. :—

Memoranda.—To be Second Lieutenants: Sergt. Frank M. Ballard, from R.F.C.; Nov. 30th, 1915, 1st Class Air Mechanic J. D. Drysdale, from R.F.C.; Dec. 5th, 1915.

Royal Flying Corps (Territorial Force).

The following appeared in the *London Gazette* of the 21st inst. :—

Hampshire Aircraft Parks, R.F.C.—Smithey H. Smith to be Major (Temporary). Dec. 1st, 1915.

To be Captains (Temporary), Dec. 1st, 1915: Frederick M. Green, Charles K. Butler-Stoney, George B. Turner and Keith Lucas.

To be Lieutenants (Temporary), Dec. 1st, 1915: Richard Whiddington and Reginald M. Maxwell.

THE ROLL OF HONOUR.

THE Secretary of the Admiralty has announced the following casualties :—

Under date December 7th:

Slightly Wounded.

Lieutenant Gerald F. Hazzard, R.M., R.M.A.,
Anti-Aircraft Brigade.

Under date December 9th:

Wounded.

Second Lieutenant Robert T. Rackham, R.M., R.M.A.,
Anti-Aircraft Brigade.

Under date December 20th:

Slightly Injured.

Flight Sub-Lieutenant Erith W. Carlton-Williams, R.N.

Missing.

Flight Sub-Lieutenant Frank Besson, R.N.

The following casualties in the Expeditionary Force have been officially reported from General Headquarters :—

Under date December 13th:

Wounded.

Sergeant J. Dewberry and Corporal J. O'Giollagain.

Under date December 17th:

Previously Officially reported Missing, now Unofficially reported Wounded and Prisoner of War.

Second Lieutenant H. S. Ward, Royal Flying Corps.

Previously Officially reported Missing, now Unofficially reported Prisoner of War.

Lieutenant S. E. Buckley, Northamptonshire Regt., 5th Batt.,
attached R.F.C.

Killed.

2nd Class Air-Mechanic A. Phillips, Royal Flying Corps.

Undated:

Previously Officially reported Missing, now Unofficially reported Wounded and Prisoner of War.

Lieutenant W. A. Harvey, Norfolk Regt., 4th Batt. (T.F.),
attached R.F.C.

Died of Wounds.

Lieutenant P. C. S. Russell, 5th Cameronians
(Scottish Rifles) (T.F.) and R.F.C.

Wounded.

Captain M. McB. Bell-Irving, Royal Flying Corps.

Lieutenant C. O. Fairbairn, Royal Flying Corps.

Lieutenant M. W. Thomas, R.F.A., attached R.F.C.

Missing.

Second Lieutenant N. G. Smith, Highland L.I. and R.F.C.

Previously reported Missing, now reported Prisoner of War.

Second Lieutenant A. W. Brown, Manchester Regt., 3rd Batt.,
attached R.F.C.

Another V.C. for the R.F.C.

It was announced in a special issue of the *London Gazette* issued on the 23rd, that His Majesty the King has been graciously pleased to award the Victoria Cross to the undermentioned officer :—

Second Lieutenant GILBERT STUART MARTIN INSALL,
No. 11 Squadron, Royal Flying Corps.

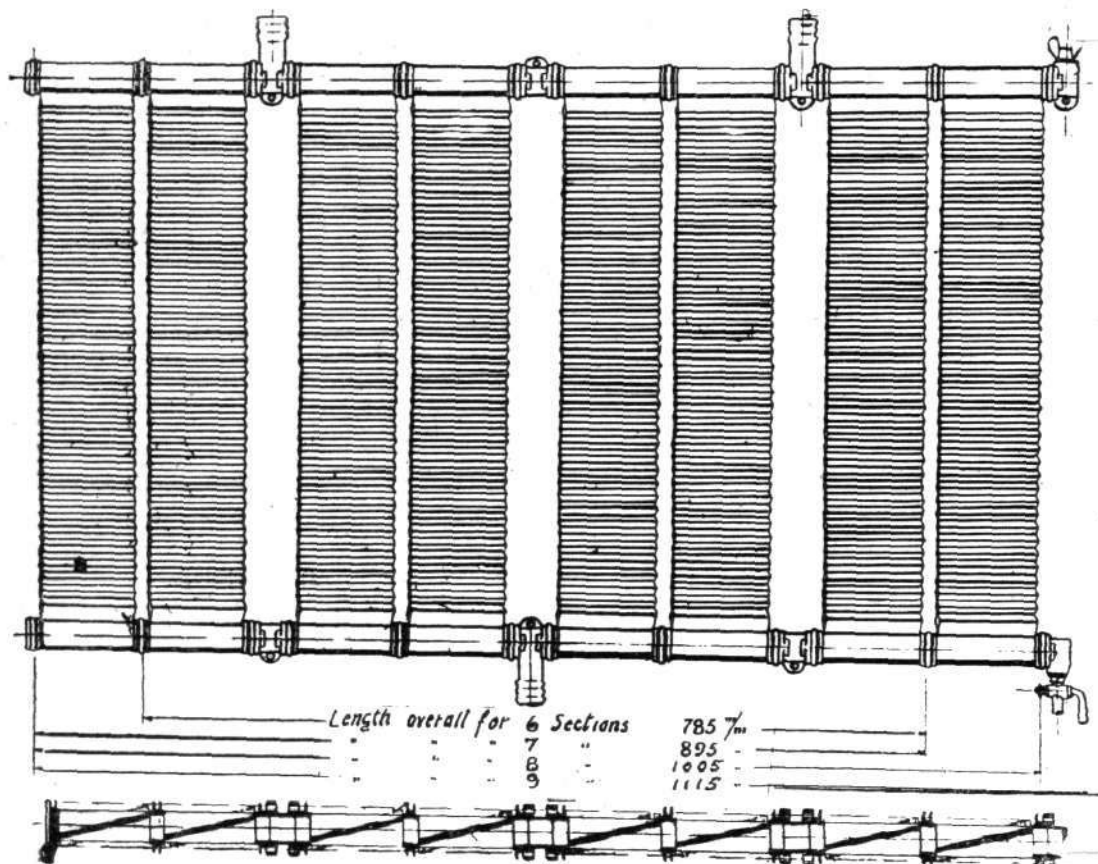
For most conspicuous bravery, skill, and determination, on November 7th, 1915, in France. He was patrolling in a Vickers fighting machine, with First Class Air Mechanic T. H. Donald as gunner, when a German machine was sighted, pursued, and attacked near Achiet. The German pilot led the Vickers machine over a rocket battery, but with great skill Lieutenant Insall dived and got to close range, when Donald fired a drum of cartridges into the German machine, stopping its engine. The German pilot then dived through a cloud, followed by Lieutenant Insall. Fire was again opened, and the German machine was brought down heavily in a ploughed field four miles south-east of Arras.

On seeing the Germans scramble out of their machine and prepare to fire, Lieutenant Insall dived to 500 ft. thus enabling Donald to open heavy fire on them. The Germans then fled, one helping the other, who was apparently wounded. Other Germans then commenced heavy fire, but, in spite of this, Lieutenant Insall turned again, and an incendiary bomb was dropped on the German machine, which was last seen wreathed in smoke. Lieutenant Insall then headed west in order to get back over the German trenches, but as he was at only 2,000 ft. altitude he dived across them for greater speed, Donald firing into the trenches as he passed over. The German fire, however, damaged the petrol tank, and, with great coolness, Lieutenant Insall landed under cover of a wood 500 yards inside our lines. The Germans fired some 150 shells at our machine on the ground, but without causing material damage. Much damage had, however, been caused by rifle fire, but during the night it was repaired behind screened lights, and at dawn Lieutenant Insall flew his machine home, with First Class Air Mechanic T. H. Donald as a passenger.

THE HAZET RADIATOR.

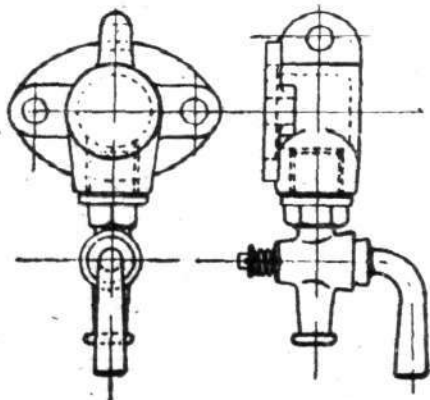
As aeroplane engines increase in power and the water-cooled type begins to find more and more favour, the question of a suitable radiator becomes one of some considerable importance. Since the percentage of water-cooled engines employed on machines in this country—

higher than that of a car, and moreover the former is running "all out" the best part of the time, whereas the latter is seldom asked to do so for long periods. Again, the question of weight is of far greater importance in an aeroplane than in a car, and the aero radiator,

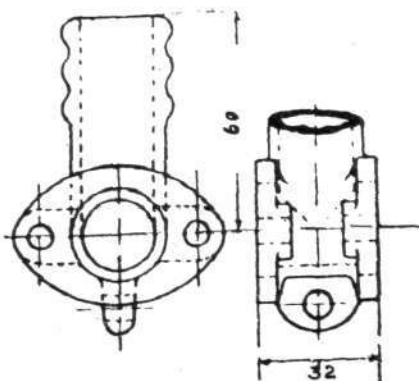


at any rate up to the time of going to war—was comparatively low, it may perhaps be said, without giving offence, that our manufacturers have not had a sufficiently long experience to arrive at anything like finality in the matter of radiator design and construction. We have, it is true, had long experience in the manufacture of radiators for motor cars, and in this respect are probably second to none in the world, but in this con-

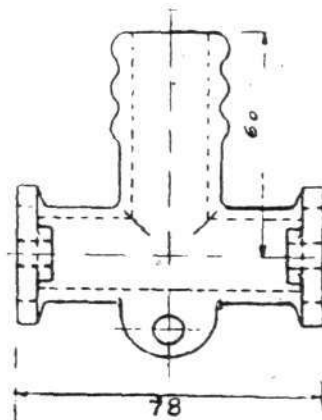
while being kept as light as possible, must be made robust enough to withstand the vibration without developing leaks. A further point to be studied in the aero radiator is the ratio of cooling effect to head resistance, and this is a point which, to our way of thinking, is one of such importance that it might well justify extensive experimental research, for instance, at the N.P.L.



Combined end plate and drain cock in the Hazet radiator.



One of the vertical unions in the Hazet radiator.



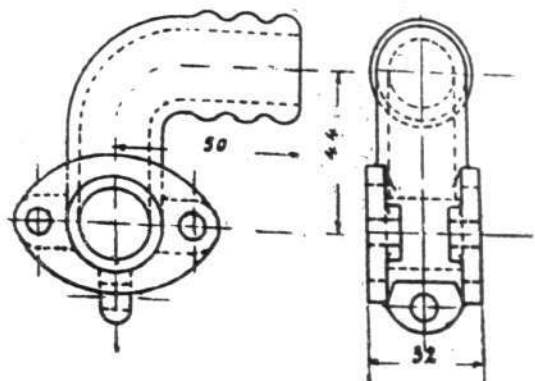
A longer "T" union for use where it is necessary for two adjoining sections to clear some obstruction.

nection it must be remembered that the requirements to be met in an aeroplane radiator are somewhat different from those obtaining in motor car practice. In the first place, the horse power of an aero engine is usually far

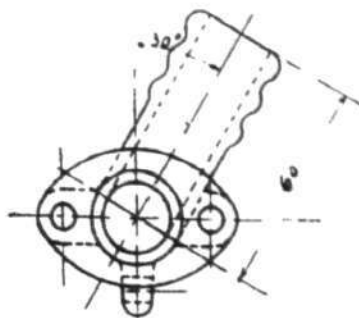
In the meantime it may be well to look around and see what has been done in this respect by others, and in so doing one almost involuntarily turns to Germany first, since that country has undoubtedly had longer experience

in the application of the radiator to the aero engine than any other country, having, as the Germans have, used the water-cooled type of engine almost exclusively, not only on military machines but on those intended for school work.

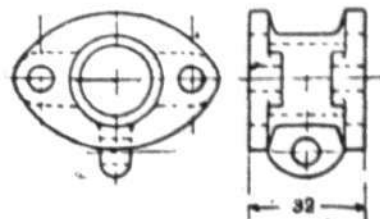
A radiator which has attained a popularity in Germany



An elbow union of the Hazet radiator.



A slanting union (slope 30°) of the Hazet radiator.



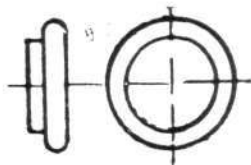
One of the short unions with lug for mounting on bracket.

probably unequalled by any other make is the "Hazet," of which we are able to publish some illustrations this week. Both the captured German Albatros machines that were exhibited on the Horse Guards Parade were fitted with this type, and as far as it is possible to ascertain a large proportion of the German biplanes seen at the front are similarly equipped, whether they be Albatroses, L.V.Gs., or Aviatiks.

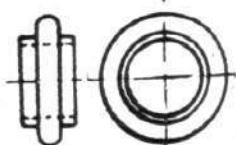
The chief characteristic of the Hazet radiator is that it is built up in sections, the size of each section having been experimentally determined and standardised for a certain horse-power. For instance, the large captured Albatros, which was fitted with a 160 h.p. engine, had a radiator composed of twenty sections—ten each side—and the smaller machine with the 128 h.p. Mercedes had fourteen sections—seven each side. Taking the former as a basis, it will be seen that one section is

sive sections shall not meet any air that has already been partly heated by the preceding section. Welded to the ends of the top and bottom pipes are thin sheet metal flanges having holes cut in them for the long bolts that serve to hold the sections together, all the unions and end plates being similarly provided. A water-tight and at the same time flexible joint between adjoining sections is formed by means of the rubber washers illustrated.

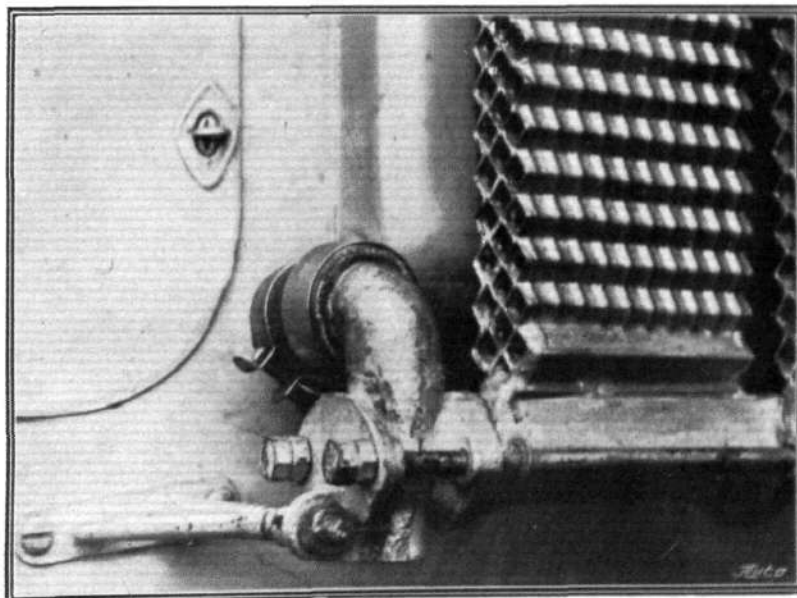
At the extreme end of the lower pipe of the radiator is fitted a drain cock, whilst the end plate of the upper pipe is provided with a valve, which in the elevation shown is operated by a butterfly nut, but on the



A rubber washer for use in conjunction with one of the end plates of the Hazet radiator.



One of the intermediate rubber washers.



Detail view of the Hazet radiator, showing the construction of the water tubes and end bracket mounting.

looking after the cooling of 8 horse-power, while in the smaller biplane, where there are only fourteen sections to an engine of 128 h.p., this apparent shortage is probably made up for by this machine being considerably faster.

As regards the construction of the Hazet radiator, this will, we think, be readily followed by a reference to the accompanying diagrams. In the large view is shown in plan and elevation a radiator composed of 8 sections, and dimensions are given of sets of 6, 7, 8, and

captured German machines this appeared to have been done away with and an automatic air valve substituted.

The various unions, it will be seen, include vertical joints of different sizes, elbow joints, and sloping joints. By means of these it is always possible to avoid obstructions such as bracing cables, &c., while the method of building up the radiator of sections enables it to be mounted on almost any machine without any special preparations on the part of the aeroplane constructor.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

SPECIAL COMMITTEE MEETING.

A SPECIAL MEETING of The Committee was held on Tuesday, the 21st inst., when there were present: Prof. A. K. Huntington, in the Chair, Mr. Ernest C. Bucknall, Flight-Lieutenant C. F. Pollock, R.N.A.S., and the Assistant Secretary.

Election of Members.—The following New Members were elected:—

Archibald Jack Campbell.
Flight-Lieut. Ronald Portman Cannon, R.N.A.S.
Bertram Powell Chase.
Second Lieut. Dougall Cushing, R.F.C.
Flight-Commander John Henry Lidderdale, R.N.A.S.
Second Lieut. John Nigel MacRae (11th Black Watch).
Arthur Meyrick.
Robert Sutherland Rattray.
Andrew Jackson Stone.

Aviators' Certificates.—The granting of Aviators' Certificates Nos. 2110 to 2180 was confirmed.

The following Aviators' Certificates were granted:—

- 2181 Second Lieut. Thomas Earle Gordon Scaife (6th Dragoon Guards (Carabineers)) (Maurice Farman Biplane, Military School, Farnborough). Oct. 22nd, 1915.
- 2182 Second Lieut. Hugh George Corby (Royal Munster Fusiliers) (Maurice Farman Biplane, Military School, Farnborough). Dec. 2nd, 1915.
- 2183 Lieut. Walter Richard Gayner (17th Reserve Infantry Bn., Canadian Division) (Caudron Biplane, Beatty School, Hendon). Dec. 11th, 1915.
- 2184 Maurice Martin (Belgian Subject) (L. and P. Biplane, London and Provincial School, Hendon). Dec. 20th, 1915.
- 2185 Henry Philip Burgess (L. and P. Biplane, London and Provincial School, Hendon). Dec. 20th, 1915.
- 2186 Flight Sub-Lieut. Adam Beattie Ovens, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). Dec. 20th, 1915.
- 2187 Eric Burnett Gammon (Grahame-White Biplane, Grahame-White School, Hendon). Dec. 20th, 1915.

Aeronauts' Certificates.—The granting of Aeronauts' Certificates Nos. 55 to 57 was confirmed.

Extension of the Hours of Opening the Club.

The Club is now open from 9 a.m. to 10.30 p.m. each day, including Sunday.

THE FLYING SERVICES FUND administered by THE ROYAL AERO CLUB.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

Subscriptions.	£	s.	d.
Total subscriptions received to Dec. 21st, 1915	10,111	15	8
Collected at the Westland Aircraft Works, Yeovil (Thirteenth contribution) ...	0	11	4
Mrs. C. de Beauvoir Stocks (Second contribution)	3	3	0

Total, December 23rd, 1915 ... 10,115 10 0
166, Piccadilly, W. B. STEVENSON, Assistant Secretary.



London Aerodrome, Collindale Avenue, Hendon.

Beatty School.—The following pupils were out during last week: Messrs. Barnes, Barrow, Drysdale, Martin, Mattos, Murdoch, Onley, Owen, Patterson, Podmore, Williams, Jaquin, Markham, Brand, Mossop, and Hoskins.

The instructors were Messrs. G. W. Beatty, W. Roche-Kelly, R. W. Kenworthy, G. Virgilio, A. E. Mitchell, and L. L. King, the machines in use being Beatty-Wright dual-control and single-seater propeller biplanes and Caudron tractor biplanes.

Flight Sub-Lieut. Savill-Onley flew for his ticket.

Three passenger flights were taken.

Hall School.—In spite of the weather conditions being very bad last week, and the week being rather short owing to the Christmas holidays, quite a good deal of practice was obtained. The following pupils received instruction in rolling and straights: Messrs. Cumberbirch, Arnsby, Ridley, Lieut. Cooke, Chapman, Collins, Smith, Cosgrave, Ormerod, Thom, Bennett, Neal, Mill-

burn, Woolley, Le Coq Moir, and Rochford. Doing straight flights, half circuits, &c.: Messrs. Capt. Grey, Redford, Butterworth, Evans, Cook, Dresser, Dodds, Mann, Nicolle, Stirling, Shum, and Sepulchre. Messrs. Stirling, Evans, Butterworth, and Cook making good progress, and should shortly qualify for their Certificates. Instructors for the week: Messrs. H. F. Stevens, C. M. Hill, J. Drew, and C. Anstey Chave. Machines in use: Hall tractor biplanes.

London and Provincial Aviation Co.—Pupils doing rolling last week: Messrs. Snow, Rimer, Loomes, Dawson, Stevens, Starey and Egelstaff. Doing straights: Messrs. Lambert, Heyn, Thorp, Medaets, and Martin. Doing circuits and eights: Messrs. Burgess, Martin, and Medaets.

Three "tickets" were taken by Messrs. Burgess, Martin, and Medaets, the latter two being exceptionally good ones.

Instructors: Messrs. W. T. Warren, M. G. Smiles, C. M. Jacques, H. Sykes, and W. T. Warren, jun.

Ruffy-Baumann School.—Pupils with instructors last week: Messrs. Hamtiaux, Pauli, Winter, Edgar, Whitaker, Laidlaw, Hoskyn, Dobson, Barnard, Flanders, Cuthbertson, De Launoit, and Vernon. Straights: Griffith, De Launoit, and Vernon.

Instructors: Edouard Baumann, Felix Ruffy, Ami Baumann, and Clarence Winchester.

The following machines were in use during the week: Ruffy-Baumann and Caudron type biplanes (dual control), 50 and 60 h.p.



Copyright, F. N. Birkett, from the F.N.B. Series of Aviators.

Some pilots who have graduated down Epping Forest way recently:—(1) A popular naval instructor, Flight-Lieut. F. Warren Merriam; Flight Sub-Lieuts. (2) R. G. Gardner, R.N.A.S.; (3) K. V. Hooper, R.N.A.S.; (4) C. G. Knight, R.N.A.S.; (5) E. T. Bradley; (6) A. W. Bowater, R.N.A.S.; (7) C. W. Greig, R.N.A.S.; (8) J. F. Horsey, R.N.A.S.; (9) L. G. Scott, R.N.A.S.; (10) E. P. Hicks, R.N.A.S.



ARMCHAIR REFLECTIONS



By THE

"DREAMER.

THIS work business. You know, when you come to think of it, it's a silly game, taking it all round. I work. I have worked for a good many years, but really I don't know why I have, or should. Of course the reply of most people to this question would be that I work because I have to, or, in other words, because that is the only way in which I can become possessed of money. But that does not, to my mind, satisfy the question at all. There are thousands of people who get money, and plenty of it too, without working at all, and plenty who work hard and get very little, or none. Besides, why should anybody pay me money for working, and what good does it do either them or me?

All the people who have ever paid me for working, are people who have to work themselves to get the money to pay me. They work first to get the money for themselves, and then pay it away to me to do some more work. Seems a silly business, doesn't it?

All the work I have ever done has gone to pot long ago, and all the money I have ever received for doing it has been spent, so where's the good?

After all, perhaps it isn't simply the money we get paid for working that keeps our noses to the grindstone. There may be something in the matter of working for work's sake, or because we can't help it, or because we like it.

Take those scribes and comps. and minders, by way of instance, who run *La Libre Belgique* in spite of all the Huns' attempts to squash it, and who have just issued their 53rd number. I think they work for work's sake, and for the glory of the thing. General von Bissing, the German Governor of Belgium, or part of it, has made incessant efforts to suppress it ever since the occupation of Brussels, but the editorial staff still scribble, the comps. still deftly choose types out of small boxes, and the machines still hum merrily along. Just where this is all done is a secret known only to those engaged, any one of whom could have £4,000 for only just telling von Bissing where he could call in and interview the editor. £4,000 is quite a respectable sum of money, more than many of those comps. and machine-minders would earn in quite a good many weeks, yet nobody seems in a hurry to "split," which goes to show that money is not the only thing men work for, even in editorial offices.

Meanwhile *La Libre Belgique* goes gaily to press every day, or, as we say, is "put to bed, and comfortably tucked in" on the appointed day, sometimes in Brussels, sometimes in Antwerp, and sometimes goodness knows where—not even for £4,000. I do not know the list of subscribers, or even the circulation, but there is one person who is never overlooked in the mailing list. Willy nilly a copy of the issue is always delivered to General von Bissing, without fail, and he must find it interesting reading. The current number, for instance, recalls an anecdote told by the late Sir W. H. Russell, the famous war correspondent of the *Times* in 1870.

At the burning and sacking of the Imperial Château of St. Cloud, at which he was present, Russell declared that one of two German officers who were particularly

active in pillaging was Lieutenant von Bissing, in whom *La Libre Belgique* recognises the present Governor of Belgium. Bravo! *La Libre Belgique*. More power to your presses. Blue pencil you can eschew, because you don't care a fig for your censor, and just say what you wish, even about him personally. I should like to have a peep at your printing office in a convent or a cellar, or, perhaps, in a sewer. Anyway, carry on till they find you, and then push old von into the stereotyping copper.

Speaking of money, there is a friend of mine who is in terrible distress because he says that next year he will have to give up half his salary by act of Parliament. I have pointed out to him the honour and glory business of working without pay in these strenuous times, but he does not appear to be too enthusiastic, and quotes Mr. Asquith as having said "I earn my salary, and I'm going to take it." I am not in a position to say exactly how things are working out with regard to State salaries. I have tried to make head or tail of it, but frankly I have failed. There appears to be some pooling arrangement, a sort of kilt, or poshpot. Everybody, so far as I can make out, pools his salary, and then they share and share alike, which is an ingenious method of helping to reduce State expenses during war time, although I don't quite know how it works. Try and work it out for yourselves, and then write and tell me how to do it, because I want to try it on our staff.

Sir A. Markham asked the Prime Minister whether he authorised the arrangement by which any reduction made in the salary of the Attorney-General would fall on his colleagues. Mr. Asquith said it was within public knowledge that, under the pooling arrangement, salaries were equalised, and that if one member suffered by reduction, they all suffered. It seems to me, that if I and Sir J. Simon pooled, he putting in £14,705 and me putting in—well—the huge roll of Treasury notes I have to send home by Carter Patterson every Friday, and we then shared—er—just so.

Sir A. Markham wished to know whether the Prime Minister was aware of the Attorney-General's statement that the fees of his colleagues would be reduced if his salary was reduced. Since Mr. Winston Churchill left the Cabinet the fees of Ministers were larger than they were when the pooling arrangement came into effect. Mr. Asquith said that was not so.

Sir A. Markham said Mr. Churchill took £300 out and left £3,000 in. And so on. As I have stated, I don't understand it, but it appears to me the co-operative salary business produces discussions.

I don't know whether I shall ever be asked to give up half my salary to help things along, but if I am, I shall want to know whether Mr. Asquith still takes his because he earns it. And, if the worst comes to the worst, I can yet ask for a job under Government, and might even be successful—look at Mr. Masterman—and if rude questions are asked as to what good "Dreamers" are, what I am doing, and what I am being paid, my champion shall know how to stick his finger in the hole in the dyke. It's a great game.



SOME time ago, it may be remembered, reference was made in "Eddies" to some delightful Pekinese puppies—three to be exact—which Mrs. de Beauvoir Stocks offered for sale for the benefit of the Flying Services Fund. One of the little doggies has now been disposed of, so Mrs. Stocks writes us, and enclosing a cheque for the proceeds, three guineas. This has gone along to the Secretary of the Royal Aero Club, which body has the administration of the F.S.F. Mrs. Stocks is to be thanked for thus showing in a practical way her interest in the welfare of our Flying Services. But what about the other two which Mrs. Stocks is still willing to sacrifice for the benefit of this very good cause? It is somewhat surprising that they have not been snapped up long ago, Pekinese being so much sought after. It must be just another surprise of the war times. In normal times it would have been a case of rushing, so as to be the first in. However, there it is, and now, who will acquire the two remaining puppies?

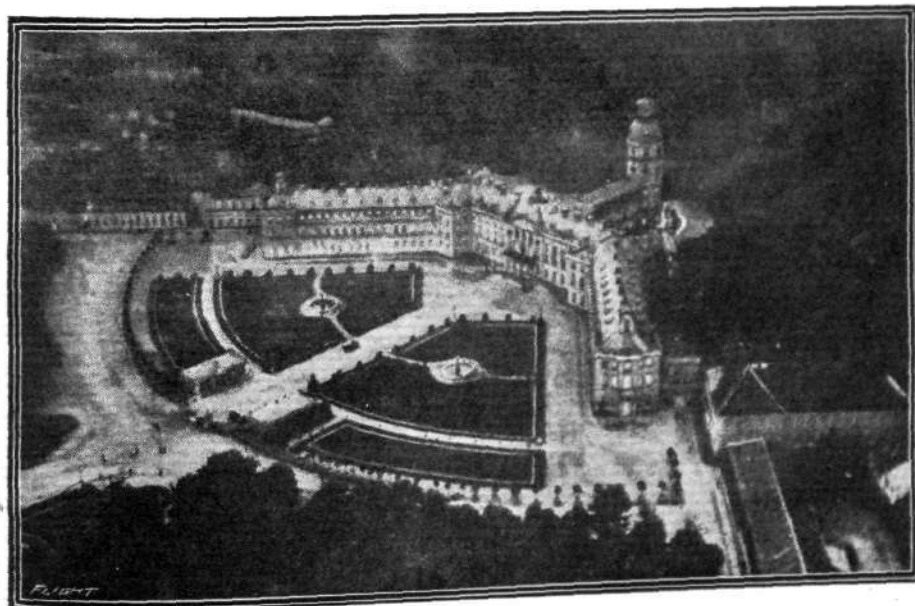
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Perhaps readers are a bit nervous about bidding against some bloated munition worker for their possession. If so, pluck up a bit of courage, as the prices are very moderate. One of them—a fine little lady—will go to the first to offer 3 guineas, while the other, a very beautiful dog, is easily worth, Mrs. Stocks thinks, 7 guineas, if not more. Mrs. Stocks' generous offer should readily find bidders, specially when it is remembered that the fund, which the money will help, is doing a lot of good amongst the Flying Service men and their dependants. This issue should reach our readers on the last day of the old year. Who amongst them will make and carry to finality his (or her) first good resolution of the new year by the purchase of one or both of the pups? A letter, express or otherwise, or a telegram, to Mrs. de Beauvoir Stocks will always find her at Westcombe, Evercreech, Somerset.

The old parish church on the hill, one incumbent of which, if my memory can be trusted, once upon a time in the early days spoke strongly against aeroplanes on account of the difficulty he experienced in keeping his congregation from rushing out of the church to look at the newfangled chariots of the air, was the scene of a wedding aeronautical on the 15th inst., when Mr. M. G. Smiles, of the London and Provincial Aviation Co., was married to Miss Beatrice Emma Warren, eldest daughter of Mr. W. T. Warren, also of the L. and P. Aviation Co. Among the many presents, one which was particularly appreciated, was a silver tea set and salver, the gift of the pupils of the L. and P. School, among whom the bridegroom is very popular as an instructor. Heartiest congratulations.

x x x

A propos the L. and P. school, when I looked in there the other day to see how things were getting along I found them at work, all out, on the new machines for the Bournemouth Aviation Co. In addition to these and the production of spare parts, of which a large stock is always maintained, they are getting on with the new tractor fuselage biplane designed by Mr. Fletcher. Some of the struts for this that I examined are of excellent stream-line section with a depth to width ratio of, I should say, at least 5 to 1. That they were beautifully made constructionally goes without saying. When the school machines for the Bournemouth Aviation Co. and a few others which are in course of construction are done with, all energies will be concentrated on the completion of the new tractor. Meanwhile school work is going on apace, when the gods of the air feel disposed to allow the training of embryo masters of their element, and as the new hangar, to which I referred some time ago, is now erected on the L. and P. "baby" aerodrome, just outside the gates, several of the machines have been transferred there. The result is that more space is available in the other sheds for erecting new machines.



As Seen from Above, in the Land of the Huns.—The Grand Duke's Castle at Karlsruhe, where one of the Allies' great aeroplane raids was successfully effected by way of giving the Zeppelin pirates a taste of their own medicine.

Has it ever occurred to you that there is any particular difficulty in making the well-known L section piston rings for Gnome engines? Considering their similarity to the familiar air-tight clips that hold the tin lid on fish paste jars, the manufacture of the Gnome piston rings ought to be simplicity itself, but I am told that it is quite a ticklish job to make them so that they do not warp. While strolling through the Beatty sheds the other day I noticed a peculiarly-shaped tool, which on interrogation I found had been specially designed for making these little brass rings. A detailed description of the tool would hardly be fair to Beatty, who has invented it, but it certainly seems to do the trick with certainty, and mighty quickly at that. I forget the exact rate of output, but you simply twiddle the thing and there you are. The ring is made. I never knew such a fellow for making everything on the premises as Beatty. He makes aeroplanes, he makes engines, he makes piston rings, he makes aerowheels, he makes—well it would probably save a lot of time to say what he doesn't make. I even noticed that he has his own pneumatic tyres, although I would not go so far as to say that *they* were made on the spot. I really should not be in the least surprised, however, to tumble across his motor car factory presently.

x x x

In the metal line the members of the Beatty staff have been working like niggers (I beg pardon, colored gentlemen I mean) are supposed to, but don't. Practically all the fittings for the new little Beatty tractor biplane are finished, and the woodwork will soon be got through. I am rather anxious to see what this little 'bus will do. She is of very pleasing lines and is expected to weigh something like 600 lb. "all up," so that she should do very well with the 35 h.p. Anzani engine. This, by the way, is in use on one of the Beatty-Caudrons, and is fitted with an exhaust collector similar to those seen so frequently on the Anzanis, having six or more cylinders. Although there is probably a slight loss of power connected with fitting this collector, it certainly seems worth it on account of the added comfort to the pilot, who escapes the better part of the oil and carbon thrown out by the engine.

x x x

Mr. Beatty did tell me how many machines are in use or will be before long, but I have long ago given up trying to keep account of them. I have a hazy recollection of him mentioning 35 Anzani-Caudrons, 45 Anzani-Caudrons, 65 Anzani-Caudrons, 50 Gnome-Caudrons, 50 Gnome-Wrights, 50 Beatty-Wrights, and possibly still more. No, gentle reader, do not trouble to start adding all these up. Beatty has *not* got 290 machines. It is all my fault through using 'drome phraseology. You are supposed to interpose H.P. between the figures and the type. At the schools it is never done. There is too much other work going on, so if you put the lot down at something less than the 290 you will be well within the mark.

x x x

After several months of downright hard work the employees of the Whitehead Aircraft Co. had a "day off" recently, not to loaf, mind you, but in the interest of charity. At the Old Deer Park, Richmond, described by some "Old Deer Park," the Whitehead men amongst them fixed up sides for a fancy dress football match. Some of the dresses were highly humorous and striking against the background of a football ground. I really do not know who refereed or who scored, but neither, I lay,

did the majority of the visitors, who were more interested in the fun and the players than in the game. The opposing forces were called the "Rudders" and the "Wings." The list of participants were as follows:—

Wings.—Boyle (Miscellaneous), Clarke (Cowboy), Croft (Scotchman), Snellock (Jester), Harradine ("Some" American), Cory (Baby), Chandler (Queer Man), Corkling (Clown), Price (Pierrot), and Bryant (Funny Man).

Rudders.—Lowe (Mrs. May), Rowland (Jockey), Howes (Good-night), Callow (Japanese), Stag (Kodak Girl), Brown (Man in White), Havis (Young Scot), Carr (Farmer's Boy), Young (Charlie Chaplin), Wright (Red-skin), and Harris (Flapper).

x x x

A bevy of the fair sex had volunteered to take charge of collection boxes, and when these were opened after the match in the presence of Mr. J. A. Whitehead and Mr. H. M. Cundall (Hon. Sec. of the Richmond Red Cross Hospital) the total amount raised for the Red Cross Fund was £6 6s. 2d. Quite a nice little "gate" considering what the weather was and that no fee was charged for entrance to the ground.

x x x

Yet another Air Service paper is to hand. This time it hails from Barrow-in-Furness, and the Editor is Mr. Alan Dilnot. Judging from the copy sent us, which, according to a heading on the cover, has been passed (and enjoyed) by the Censor, the "Pom-Pom," as it is called, should soon become popular with the R.N.A.S. of the district. It is illustrated with some humorous sketches, and the reading matter is throughout in a chatty, personal vein, at any rate in the copy under review. Here is a sample of the choice chips:

Mentioned in despatches.

Ehrmann, A. B., for buying a new pair of trousers after his old ones had commenced to give him a Maud Allan appearance.

Hay, McCulloch, Stuart, and all the other Scotchmen, for trying to talk English.

x x x

A corner in the little magazine is devoted to "Polite Society Rules." The following is owned to by Arthur D. Trollope, and gives an amusing view of "When Officer Meets Officer" behaviour, the suggestive formula for such an emergency being set out as below:—

"Owing to the large numbers of R.N.A.S. ratings who are applying for commissions, it is suggested that the next issue of the 'Pom-Pom' should contain a few hints for their guidance as to behaviour during meals, as the average manners of the R.N.A.S. at mess would hardly meet with approval in an officers' mess.

"The following are a few suggestions:—

"It is not necessary to raise your plate from the table when taking soup, nor do you make a clucking noise as you drink it.

"Do not spread your arms out too much—the Colonel may cut his mouth.

"Never wipe your knife on a piece of bread at the conclusion of a meal.

"Do not stir your tea with your knife—spoons are usually provided.

"Never address the Colonel as 'Arch'; his name may be Bill.

"If you mention a lady's name in mess you are fined drinks all round—rather expensive for you after a night with the 'birds.'

"It is not usual to drink wines from the bottle.

"And never, however hungry you are, rush for the joint, waving a knife and fork in your hand, as soon as it appears on the table."

Was it for this that a real live Admiral has been brought along to take control?

ÆOLUS.

SOME AMERICAN AERO ENGINES.

THE MAXIMOTOR.

THREE types of aero motors are manufactured by the Maximotor Co., of Detroit, Michigan, U.S.A., four-cylinder vertical, six-cylinder vertical, and eight-cylinder "V." There are two models to each of these types, but

crankcase by six nickel steel bolts are employed to carry the load as well as the thrust. The connecting rods are very light and strong, being drop-forgings of chrome nickel steel, double heat treated.

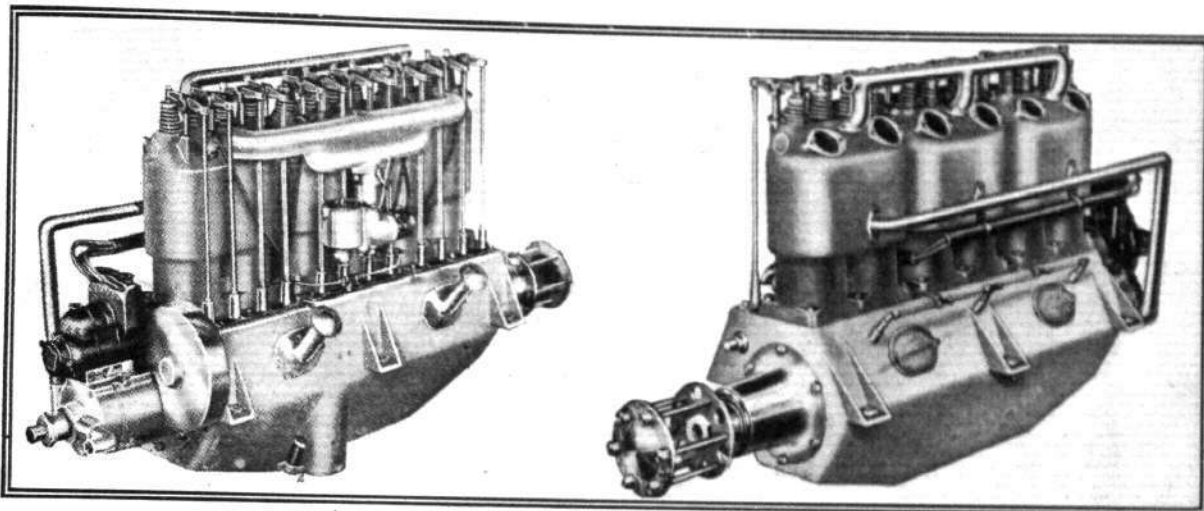


Fig. 1.—Two views of the 6-cyl. 100 h.p. Maximotor.

they differ from each other only as regards the dimensions of the bore and stroke. The full range is as follows:—

Model.	Cylinders.		h.p.	Bore and Stroke.	r.p.m.	Weight.
No.	Position.			ins.		lbs.
A-4	4	Vertical	40-50	$4\frac{1}{2} \times 5$	1,500	200
B-4	4	"	60-70	$5 \times 5\frac{1}{2}$	"	260
A-6	6	"	70-80	$4\frac{1}{2} \times 5$	"	300
B-6	6	"	90-100	$5 \times 5\frac{1}{2}$	"	370
A-8	8	V 90°	120	$4\frac{1}{2} \times 5$	"	400
B-8	8	"	150	$5 \times 5\frac{1}{2}$	"	450

Most of the following notes apply particularly to the six-cylinder and eight-cylinder types, as these are the more popular and they have much in common with the four-cylinder models. In the six-cylinder models the cylinders are cast in pairs from vanadium grey iron containing 30 per cent. steel. Both inlet and exhaust valves are of large size, and are located in the cylinder heads, being mechanically operated from a single camshaft by adjustable tappet rods and rocker arms. The stems are of steel, whilst the heads are even expanding iron castings fused about the stem. It is claimed for these valves that they retain their shape, without pitting, three times as long as steel-head valves. The pistons are cast from the same material as the cylinders, and are heavily ribbed at the heads and machined both inside and out to allow for equal expansion. Each pair of cylinders is held down on to the crankcase by six bolts. The water jackets are of ample proportions, and the water is circulated by a pump mounted on the end of the crankshaft.

The crankcase is a one-piece casting from a special aluminium alloy, thereby forming a very neat job free from joints and bolts—a noteworthy feature as regards aero engines. The crankshaft is cut out of a solid billet of imported steel, double heat treated, thereby having a high tensile strength. It is machined, drilled, and ground to size within one-thousandth of an inch. Ball bearings are employed for all the main bearings, of which there are five. The propeller end of the crankshaft is rigidly supported, and two annular ball bearings mounted in a vanadium steel housing recessed and bolted to the

Nickel steel tubing is employed for the camshaft, the cams being of special high carbon steel, tempered, ground and held in place by taper pins. Ignition is by a Mea magneto driven off the camshaft gear wheel, and the plugs are located in the cylinder heads alongside the valves.

A Schebler or Kingston carburettor is fitted, and a

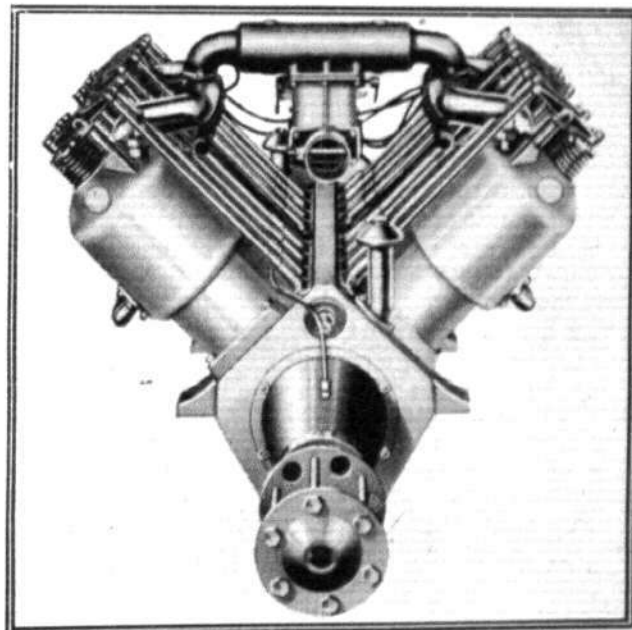


Fig. 2.—End view of the 120 h.p. 8-cyl. "V" Maximotor.

mechanical system of lubrication is employed, a small rotary pump in the sump forcing oil to the bearings, &c.

In the "V" models the cylinders are similar to the vertical engines, being cast in pairs from the finest close-grained semi-steel with long water jackets of welded pressed steel. The valves are placed in the cylinder heads, the inlet valves being $2\frac{1}{4}$ ins. diameter and the

exhaust $1\frac{1}{2}$ ins. diameter. The heads are of cast iron fused to the steel stems, as in the other models. The valves are operated by means of tappet rods and rocker arms from a central camshaft situated in between the cylinders. The water pump is of the centrifugal type of

plete with the cams by withdrawing five set screws. The connecting rods are drop forged from nickel steel. The crank case is cast in one piece from an aluminium alloy, and is well ribbed. A gear type pump situated in the deepened front of the crankcase forces oil under high

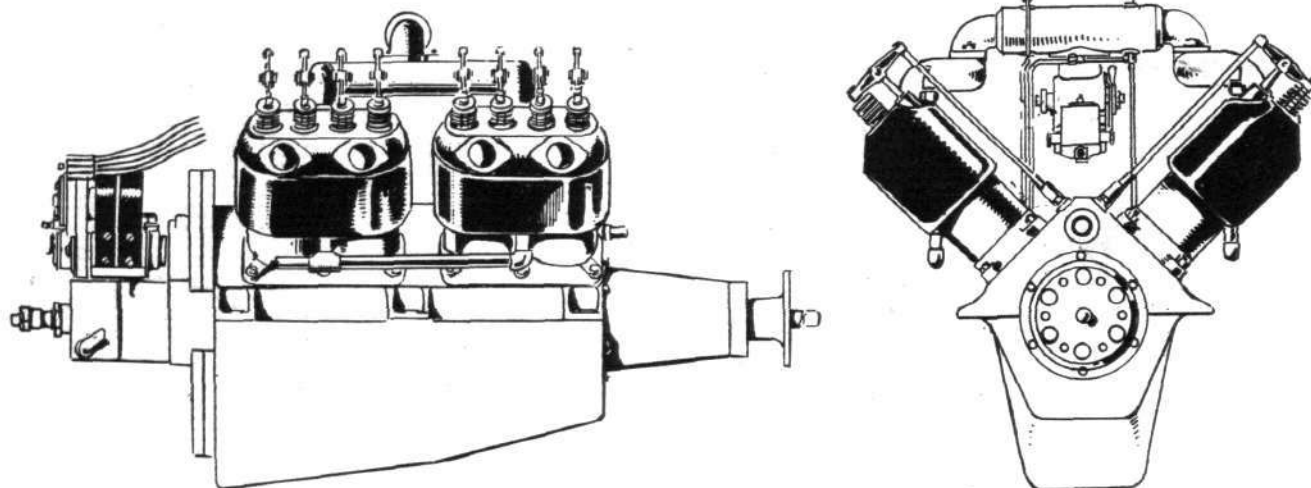


Fig. 3.—Side and end elevations of the 120 h.p. 8-cyl. "V" Maximotor.

large capacity with double outlet. The pistons are of the same material as the cylinders, very accurately machined with convex heads.

Cut from a solid billet of chrome vanadium steel, the crankshaft is $2\frac{1}{8}$ ins. diameter and hollow bored. Nickel steel tubing is used for the camshaft, and the cams are pinned by three nickel steel taper pins as in the other models. Both crankshaft and camshaft are supported by ball bearings, and the camshaft can be removed com-

pressure through the crankshaft, whilst a supplementary system sprays oil on the pistons and cylinder walls.

The carburettor is mounted between the cylinders, and oil from the sump is circulated through a jacket formed on the intake manifold, thereby warming the petrol mixture, at the same time cooling the oil. Ignition is by Bosch magneto driven direct by the camshaft. The petrol and oil consumption of this engine is about 8 gallons and 3 quarts respectively.

THE UNITED STATES AND THE COMMAND OF THE AIR.

WHEN the memory goes back to the early days of the struggle to obtain Government recognition for British aviation, nothing but the most sincere sympathy can be felt for the body of men in the U.S. who are making it their business to bring home to *their* Government the vital importance of air power. Many of the American constructors are for the time being not so much concerned, as they are being kept pretty busy by the requirements of Great Britain and the Allies. But the Ruling Body—the Aero Club of America—has a bit further to look, and is strenuously working with the hope of bringing home to the U.S. Administration the vital importance of adequate provision being made for the aircraft section of the defence of the States, in the new movement which has found favour for restoring America to the second place among the naval powers of the world. In this connection the Board of Governors of the A.C. of America, through its President, Mr. Alan R. Hawley, have put forward the case for a bold aeronautical policy in a well-balanced letter which they have addressed to the Secretary of the Navy, the Hon. Josephus Daniels; and after applauding the efforts which are to be made to promote the very laudable national ambitions of the United States, the communication puts its case in a very concise form, and with commendable candour, in regard to the weakness of the present proposed programme. Facts, past and present, are given which are of extreme interest and will in the years to come form very illuminating reading, in face of the developments which may confidently be looked for, and therefore we reproduce

below this letter of the Aero Club of America, as an epoch mark in the world's history of Aviation, from which the real formation of an American Airfleet may easily take its date of birth. The text of Mr. Hawley's communication is as follows:—

"The Board of Governors of the Aero Club of America, having been authorised at the annual meeting of the club to transmit the club's indorsement of a naval policy, which will restore America to the second place among naval powers; and, further, having been authorised to urge the Navy Department to provide for an increase of the appropriation to be made for aeronautics, which is but two million dollars, begs to submit herewith the following memorandum, in which, after full consideration, the Board has embodied its conclusions:—

"The Board heartily indorses, and joins in, the nation-wide demand now being made upon the Administration that it provide for restoring America to the second place among naval powers of the world. It holds that every consideration of the country's security requires that action towards this end shall be taken at once, and is convinced that the people will be satisfied with nothing less.

"The Board, however, does not presume to suggest the steps that should be taken to restore America to the position of second naval power, because the General Board of the Navy alone is qualified to say how this should be done. But the Board does believe that it is voicing the sentiment of a great body of the American people when it asserts that, whatever may be the cost of giving the United States that full assurance of safety which its restoration to the position of second naval power will provide, that cost will be cheerfully borne.

"The Board believes that the Navy is now in such a state of deficiency, shortage of personnel and material, that it is doubtful if the appropriation which you have recommended will do more than supply the deficiency of our existing Navy and serve to bring it up to the desired state of efficiency and homogeneity that the Navy in its present size should have.

"For instance, the existing aeronautical equipment of the Navy comprises less than twenty aeroplanes, including those actually in commission and those ordered. The addition proposed would comprise only seventy-five aeroplanes, which is what we should have had two years ago, and is only one-tenth of what we need now and should at once have wherewith to meet the aeronautical needs of the Navy. Furthermore, no provision has been made for the building of a large number of dirigibles of huge size which the war in Europe teaches us we must have. These are expensive craft, requiring expensive equipment for their operation.

"In studying that portion of the proposed naval program which deals with aeronautics, the Board finds that provision is contemplated for only seventy-five aeroplanes—all of which we learn are to be installed on board cruisers. No provision is made for the auxiliary service which is essential to supply the needs of this highly specialised branch; no special hangar-ships for carrying reserves of these fragile machines; no mother-ships for necessarily frequent repairs and overhauling; no aeroplane-ships to accompany the Fleet and to furnish planes for the important work of spotting the fall of shots, for its protection against submarine attack, for scouting in search of an expected enemy-force and for the increasingly numerous and important uses to which aircraft are every day being put.

"It has been for long the thought of the people of the United States that the two great oceans which wash the shores of our country are in themselves protective barriers which render us immune from attack. The extreme mobility of modern naval forces makes the sea more of a convenience, for the enemy of any country with a coast line as long as ours, than a barrier. An attack by land, in most cases, is restricted to a certain limited length of frontier and must come from a certain direction generally. Germany had to go through Belgium in order to reach France effectively. Our naval frontiers are of tremendous extent and an attack may come at any point. When the attack comes, it will come suddenly, almost without warning; and no man can foresee the point at which or the conditions under which the naval attacking force must be met.

"The experience of the Spanish-American War (and who can forget the semi hysteria caused by the reports of the approach of the Spanish squadron?) and of the two war-games played recently has shown that it is possible for a hostile naval force to reach our shores without detection. We have but three scouts—and no merchant marine from which fast scouting vessels could be drawn in time of threatened danger. From Maine to Panama, on the Atlantic; from Alaska, through Hawaii to Panama, on the Pacific, our long frontier stretches. We could not go to meet the enemy—not knowing where to come up with him. Our utter lack of scouts would impose on us the attitude and the tactics of waiting, in miserable uncertainty, at some strategically central point, until by chance we would get information of the enemy—a terrible interval of watchful waiting.

"The Board has learned, in a general way, that in the event of an imminent attack, the proposed method of the Government to meet the expected attack would be to deploy our limited number of cruisers along as long a line as possible and about three hundred and fifty miles from shore—holding the battleships, in groups of four, closer in shore in the hope of being able to concentrate them in time at the point where the attack would fall. Such a division and dispersion of the main fighting-force is against all accepted principles; and in the event that the main force of the enemy should, by chance or by design, run in between two groups of our battleships and prevent their junction, our entire force would be exposed to destruction in detail. These inshore groups of battleships, having no air scouts of their own, would perforce depend entirely on the outer scouting-line for information, and, should the enemy succeed in getting through or around this outer line without detection (as has happened twice in war-games), our dispersed main force would be powerless to stop him from reaching our shores.

"The quickest, cheapest and best way in which to counteract our deficiencies in scouts is to provide a large number of seaplanes, not only with the cruisers, as is now being planned, but also with and for use by the battleships, these seaplanes to be kept on board of seaplane-ships which will go with the battleships. The Allies' battleships at the Dardanelles and the Russian battleships on the Black Sea have been supplied with seaplane service from seaplane-ships.

"In a plan submitted to the Board of Governors of the Aero Club of America, which is part of an article appearing in *The Metropolitan Magazine* for January, 1916, the immediate aeronautical needs of the Navy are outlined as follows:—

"(1) At least three more aviation stations at important naval centres in the United States, and one at each of the important naval bases in the Philippines, Guam, Hawaii, Guantanamo, the Panama Canal Zone, and Porto Rico, with between twenty to forty seaplanes and aeroplanes at each base.

"(2) At least two fully equipped mother-ships for seaplanes, with

at least one dozen aviators and twice as many seaplanes permanently assigned to each ship. The 'Mississippi' was assigned to aeronautical duty in 1913, but just as important experiments with a launching-device for seaplanes were being planned, the 'Mississippi' was sold to Greece, and the experiments had to be postponed for a year, until this October, when the 'North Carolina,' which was assigned to aviation duty, finally reached Pensacola. This ship is not yet equipped for service as a seaplane ship.

"(3) The Navy should acquire large seaplanes for submarine warfare and torpedo-launching. Probably the most interesting thing about the conflict between the German U-boats and the seaplanes is that the 'America,' which was built here before the war and in which Flight-Commander Porte intended to cross the ocean, has, it is said, destroyed without assistance no fewer than three submarines. One was blown up with bombs, and the other two, we are told, were forced to come up, the 'America' having broken off their periscopes by flying over them. The destroyers then got them. Seaplanes of the 'America' and 'super-America' class, carrying heavy armament and a large number of bombs, are much feared by the U-boats. There have been a number of cases where the aviator has swooped down on the submarine and smashed its periscope. Then the submarine, being blind, must come to the surface, where it is easy prey for either the seaplane, the destroyer, or the trawler.

"The Navy does not yet possess any large seaplane fitted for warfare against submarines, and has only one such ordered for experimental purposes.

"(4) A need which will become evident in the next six months will be for large seaplanes, to be used for launching torpedoes. All the European powers are now regretting that they did not pay attention to the development of the torpedo-launching seaplane, by means of which it would be possible for every merchant ship and transport to materially protect itself against attacks not only of submarines, but also of torpedo boats and cruisers.

"Torpedo-launching by aeroplane is a new development, not yet practised in the war for the reason that the powers need seaplanes in large numbers for other purposes and cannot allow their constructors and officers the time required to construct large machines and to conduct experiments in launching full-sized torpedoes.

"The feasibility of launching torpedoes from seaplanes has been demonstrated by the experiments of Captain Alessandro Guidoni, Royal Italian Navy, at the arsenal at Spezia, Italy, and advocated in the United States by Rear Admiral Bradley A. Fiske, U.S.N. But the possibility of getting better results with a seaplane costing only about \$15,000, and requiring but two men to operate it, than are obtainable from a destroyer costing \$1,360,000, requiring hundreds of men to man it, has seemed too preposterous to be taken seriously, and neither of the above-mentioned officers received serious consideration until a few months ago. Captain Guidoni has succeeded in launching torpedoes weighing 700 lbs. and hitting the target nine times out of ten from a distance of one and a half miles. When torpedo-planes are in use, the accepted status of things in naval warfare will change.

"A light cruiser, such as the German 'Emden,' or even a small gunboat now terrorises a whole section—nothing can reach it; the sending of a large ship is hardly worth while, when a torpedo-plane from a steamer or station would be ample to deal with it. Again, a large merchant steamer is now at the mercy of a small gunboat or submarine. With two torpedo-planes—aboard, it would be quite beyond trouble—it, rather, could make trouble for the gunboat. Another instance: an impudent little gunboat sails to the entrance of a port, blockades it, and prevents the flow of commerce. The torpedo-plane would deal with this easily.

"This report points out that Germany in her five-year budget of three years ago allowed \$35,000,000 for aeronautics, and estimates that the United States can be made fifth in aeronautical equipment by spending \$25,000,000, England, Germany, France and Russia remaining at the head; or seventh, behind Austria and Italy, by cutting the allowance down to \$17,500,000—or it can be left behind Japan, Spain and the Netherlands by allowing only \$10,000,000. Lastly, it can be left where it is, behind the least of the other countries' colonies, by allowing less than \$10,000,000.

"Providing seaplanes to be 'loaned' to the Naval Militia and the Naval Reserve is another important matter which has not been included in the proposed naval program. As the Navy Department has repeatedly expressed the opinion that it is necessary that the Militia be equipped with seaplanes, it is not necessary to dwell on this point further than to urge that provision be made to supply at least two seaplanes to the Naval Militia of each of the twenty-three states having such organisations. The Navy Department has promised this and several states have applied for same, but there are no aeroplanes available.

"You will understand, of course, that this is addressed to you as the result of realisation on our part that it is our duty to bring this important subject to your attention. We also carefully call your

attention to a passage in the address of Mr. Balfour made in the House of Commons, in which, replying to the general inquiry as to why London was not being protected against Zeppelin attacks, he said that conditions would be different if England 'had set to work three or four years before the war with a full knowledge of the development of aerial warfare, and if the Government of that day had

set to work with that knowledge to organise the defence of London.' It is our duty to see that we in America do not invite attack by neglecting to provide adequate national defence, that it may never be said of those who are responsible for the government of to-day, that they, like the British Government, neglected their opportunity to provide an aerial defence."



The German "Search" of North Sea.

THE *Daily Mail* correspondent at Copenhagen on December 28th wrote:—"With regard to the statement issued by the Berlin Admiralty recently that part of the German Fleet had 'searched the North Sea for the enemy but that the British were nowhere sighted,' captains of merchantmen who observed the German Fleet's movements state that it steamed with great caution close to the coast. Several Zeppelins and aeroplanes flew at a great height and ahead and watched for hostile ships. The aircraft were uninterruptedly in wireless communication with the fleet."

The Defence of London.

REPLYING to a question asked by Mr. King in the House of Commons last week, Mr. Tennant stated that the Anti-Aircraft (London) Corps had not yet passed under the control of the War Office. The gunnery portion of the defences was still under the Admiralty, and presumably Admiral Sir Percy Scott was still in power.

Dr. Macnamara, replying on the following day to Major Hunt, stated that it is anticipated that that transfer will take place shortly. So far as I am aware, it is intended to continue the members of the Anti-Aircraft Corps, when transferred to War Office control, in their existing duties.

R.F.C. and Anti-Aircraft Artillery.

IN the House of Commons on the 22nd inst. Capt. Wright asked the Under-Secretary for War if he recognised the necessity of organising anti-aircraft artillery in connection with the Flying Corps, or as a separate branch of the artillery.

Mr. Tennant: The necessity referred to is fully recognised, but it is not desirable to make public any changes in organisation which may have taken place, or any which it may be desirable to effect.

Dual Control for Airplanes.

MR. TENNANT, replying to Mr. Fell, who asked whether every German airplane had a dual control to enable the observer to bring the machine down safely in the event of an injury to the pilot, and why so few of our machines were so fitted, said:—"I understand that, though a small number of German machines are fitted in the manner described, the majority are not; and I may add as regards

the second part of the question that dual control is being fitted in those types of aircraft where it is desirable.

Fire Extinguishers and Air Raids.

SIR J. SIMON, in reply to a question asked by Sir H. Dalziel in the House of Commons last week concerning the prohibition against certain British-made fire extinguishers, said:—"If all claim to be effective against Zeppelin bombs or the fire caused by them is abandoned I do not think the warning issued by the Press Bureau would apply."

Burberry War Bargains.

BURBERRY'S Annual Half-Price Sale of every sort of tailored garment, that either sex requires for out-door purposes, opens on the 1st of January, and promises to be memorable not only for the size and variety of the stock to be disposed of, but because it will enable many to carry out the financial admonitions of the Chancellor of the Exchequer, who has issued a solemn warning that for some years it will be necessary for us to live on half our income, and allocate the other half to war loans and taxes. Apart from this the sale will provide an opportunity to many to acquire what has previously been a luxury denied to them.

Included in the sale will be a large number of the choicest Burberry models, marked at half price, as well as an immense assortment of men's suits, in fact, the whole remaining 1915 ranges, left in the completed suit department. In addition there will be a large accumulation of distinctive cloths, woven and proofed by Burberry's special processes for making up into garments at prices to bring them within the reach of all.

Large portions of Burberry's Haymarket premises are entirely devoted to the sale, and, although considerably over one hundred of their staff are in the Army, business will be conducted with the same zeal, despatch and intelligence as have always distinguished the firm's methods, whilst every possible arrangement has been adopted for looking after the comfort and convenience of customers. Ample accommodation, systematic classification of stock, and highly trained attendance, should go far towards obviating the drawbacks usually associated with sales of this importance. An illustrated catalogue of the sale, will be forwarded free, on receipt of a post-card by Burberry's, Haymarket, London, S.W.



"Life is a mirror—smile at it and it will smile back; frown at it and it will frown again."

Free Translations.

"R.F.C." = Redoubtable Fighting Contingent.

"R.N.A.S." = Representing Nemesis at Sea.

! ! !

Zip. Raids and Subdued Light Caution.

"AIN'T you rather young to be left in charge of a chemist's?"

"Perhaps. What can I do for you?"

"Do your employers know it's dangerous to leave a mere boy like you in charge of such a place?"

"I am competent to serve you, madam."

"Don't you know you might poison some one?"

"There is no danger of that, madam. What can I do for you?"

"Think I had better go to the shop down the street."

"I can serve you just as well as they can, and as cheaply."

"Well, you may give me a couple of night-lights; but it doesn't look right."

! ! !

Dutiful as Usual.

IMPETURABLE JAMES: "I don't know whether you would like to see them, sir, but the Zeppelins have come."—*Bystander.*

Some Gas!

THAT young man in the train who scoffed at our gunners for not being able to hit a "gas-bag holding five million cubic metres of gas," must be the official who is on such friendly quarterly terms with our meter.

! ! !

Now that French newspapers have been distributed over parts of Germany from aeroplanes, certain Sunday papers can scarcely claim the highest circulation.

! ! !

It is suggested that certain of the National Gallery treasures should be sent out of Zeppelin range—to Bath. Some of the classical subjects seem just ready for that.—*Whipped Topics.*

! ! !

Unrecorded Sayings of Popular Pilots and Their Friends.

"WE started to design her on the 1st, she was finished on the 2nd, and we hope to have her flying to-morrow."—N.P.B.

"WAAL—jes erlillbit."—W.L.B.

"ARE you fond of apples?"—T.A.R.

"LET's change the props."—R.F.M.

AIRCRAFT AND THE WAR.

IN a despatch from Petrograd given in the *Morning Post* of the 28th, that paper's correspondent in the Russian capital says:—

"As I pointed out some while ago, the intense cold has told seriously upon the German scouting service. For a long time the Germans in Russia have relied upon their double-nationality spies resident in the country, with whom communications were kept up as a last resort by aeroplanes. Nowadays the Russians make a clean sweep of untrustworthy persons within the zone of military operations, and German aeroplanes cannot safely continue their expeditions. The cold rapidly increases with every few yards of altitude, and as aeroplanes rush swiftly through air at a temperature from fifty to seventy degrees below Fahrenheit freezing point, no known methods will keep the pilot and observer from death by cold. Therefore the German pilots now fly at much lower altitudes, and even then without always escaping the worst effects of the intense cold. The Russians now bring them down at the rate of several daily, chiefly with rifle shots.

"Captive balloon observation points fare little better, as they make admirable artillery marks in the clear, frosty air. One was brought down on the Dwinsk front by artillery, which continued to bombard the place where it fell, and before long a tremendous explosion took place. Evidently a shell exploded the stores of gas for the balloon.

"The Germans are now necessarily resorting to regular scouting work, but apparently their men lack the initiative and resource required for successful scouting. The Russians, who live an open-air life all their days, are naturally good scouts, and parties return every night with German prisoners. Some feats performed by scouting squads rival those of the now famous parties operating in the rear of the German positions."

Writing to the *Daily Mail* from General Headquarters under date of December 20th, regarding the recent attack on Ypres, Mr. W. Beach Thomas says:—

"The weather, which made the gas attack possible, gave also a rare opportunity to the airmen. On that sunny Sunday morning took place in connection with this inconsiderable skirmish perhaps the biggest aeroplane fight that the world has yet seen. The prophetic picture of 'airy navies grappling in the central blue' was fulfilled to the letter. It is reckoned that 40 aircraft were in the air successively, if not quite simultaneously; and 40 may certainly justify the word fleet. We lost no craft, and within the two days three of the enemy were 'sunk.'"

On the authority of a trustworthy Dane who has just arrived from Constantinople, the *National Tidende* states, that Krupp's big new ammunition manufactory outside Constantinople has been completely destroyed by British aviators. All the coastal steamers have, too, been sunk.

A Reuter message from Salonika, dated December 21st, states:—

"This afternoon an aeroplane, supposed to be a Taube, was perceived at a great altitude west of Salonika. Five French aeroplanes were seen going in pursuit, whereupon the supposed Taube retired, and was lost to sight."

Reuter's correspondent at Amsterdam, under date December 21st, reports:—

"A delayed telegram from Ameland (north of Holland) states that an aeroplane passed over the north of the island this morning going in a westerly direction. During the night light signals were continually observed out at sea.

"A later telegram states that an airship also passed over the north of the island at noon to-day, flying in a westerly direction."

From its frontier correspondent the *Telegraaf* learns that on December 19th a British aviator reconnoitring over the German lines between the front and Bruges was shot down by anti-aircraft guns.

The *Morning Post* correspondent at Stockholm, in a message dated December 23rd, states:—

"A correspondent of the *Social Demokraten* telegraphs from Halmstad that a Zeppelin was sighted there yesterday. It was seen above the entrance to the port, and when it left travelled southwards. Its visit was associated with the American steel barque 'Andrew Welsh,' which is still at Halmstad, and which the Germans are evidently striving to capture. The military guard in charge of the vessel has been further strengthened."

A Central News message from Amsterdam, dated December 23rd, states:—

"It is stated from a German source that Russian aviators have dropped bombs at Czernowitz."

Further details received by the *Telegraaf* from its frontier correspondent regarding an aerial duel near Bruges, put a very different complexion on the incident to that given by the German *communiqué* of December 20th:—

"A German official report, which recently stated that near Bruges an English aeroplane had been shot down and officers killed, was incomplete, as in the encounter a German machine also fell to the ground, killing its pilot.

"A British aeroplane flew over the district of Lichtervelde, south of Bruges, and dropped several bombs, one of which hit an ammunition depot, causing a heavy explosion. When the British machine was about to return a German aviator went in pursuit. A hot engagement in the air ensued, when suddenly both machines fell to earth, killing their occupants."

An Athens despatch to the *Giornale d'Italia*, dated Monday, states:—

"Allied aviators have bombarded the Bulgarian encampments at Doiran and Gevgeli."

The following extracts are taken from an article in the *Vossische Zeitung*, by Dr. Max Osborne, on the scene in Champagne:—

"It cannot be said that the Headquarters Staff in K. has a particularly quiet time. We had scarcely ventured out of the house when a loud explosion was heard. This was not the first occurrence of the kind, for the enemy aviators had been flying over the district all the afternoon. But their work grew livelier now. And look! Right over the roof of the house of the divisional staff there is one of these threatening fellows. He is fairly high, but you can see well enough that he is a French airman. The machine is greeted with a lively fire. It seems to be surrounded with shrapnel. And the Frenchman does not like his reception. He darts this way and that, as if he were undecided what to do. But he continues to fly right over our heads. We rushed into the street, and the soldiers followed our example. The commander wrinkled his brow. 'Let every one seek cover,' came the order. The soldiers dispersed, but the commander did not think of seeking shelter. He remained in the street. It was too fascinating a spectacle to miss. In the meantime the gunners plied their trade.

"At that moment a tall officer came round the corner, and went up to the commander, clicked his heels together, saluted, and said: 'Your obedient servant, Excellence, two French airmen have been captured.'

"Everyone looked round. There they stood, two fine young men. Their faces were deathly white, and one could read the terror of death and the excitement of their present situation in their countenances. They stood in front of the General, staring into his face as if they would read their fate there.

"'Je suis blessé,' said the pilot, and pointed to his back. But the officer who had brought them up said that the wound was not dangerous—only a slight hurt the Frenchman had received as their machine came to the ground after the engine had been hit. 'Au jardin, s'il vous plaît,' said the General politely, with a wave of the hand. Both were so astonished at this chivalrous greeting of the enemy that they appeared at first to be rooted to the ground.

"And now they stood at our side and looked up at the firing which was directed at their comrades in the air, until the airman up above made off and the two Frenchmen were taken further afield.

"We may gather from this how wonderfully active the French aircraft are."

Writing to the *Daily Mail* from Athens on Monday, Mr. J. M. N. Jeffries says:—

"Allied aeroplanes report no activity whatever in the German-Bulgar camp."

From a correspondent in Belgium the *Telegraaf* learns:—

"On Sunday eight aviators of the Allies made a reconnoitring flight over Belgium and dropped bombs with success on German depôts on the French frontier.

"One aviator remained for over an hour above Landes, and was heavily fired at by the Germans, but disappeared safely."

The *Morning Post* correspondent at Amsterdam, writing on December 27th, says:—

"Allied aviators dropped bombs on Bruges on Christmas Day. They also appeared above Ghent, and, notwithstanding a heavy fire from the enemy, they escaped unhurt."



Another New-Comer in the Industry.

ONE of the latest among old-established engineering firms to extend their activities to enable them to enter the aircraft industry is Messrs. Henry Simonis and Co., of Cumberland Avenue, Park Royal, Willesden, London, N.W., whose work in connection with fire engines and fire fighting appliances is known the world over.

What may be said to be their first essay in aircraft construction

The *Evening Standard* Athens correspondent, on Tuesday, regarding the situation in Macedonia, says:—

"Reconnaissance flights by Allied aviators over the enemy's lines have shown hitherto that the enemy was inactive, but they now report that he is entrenching along the whole front."



manufacture of component parts on a large scale, as well as undertaking sub-contracts for various types of machines.

Being exceptionally roomy, with plenty of space available for further extensions, well equipped with wood-working machinery and other machine tools, welding outfits, &c., the factory is eminently suitable for such work. It may be pointed out that the work originally carried on by the firm is not so foreign to the new line as might be at first supposed, and their extensive experience, together with the character of the organisation, has enabled them to



The Works of Messrs. Henry Simonis and Co. The top left hand view shows the outside of the works and on the right is seen some of the aeroplane parts which have been turned out. Below are seen two views of the shops, while inset is one of the fire engines built by the firm.

consisted of a number of airship ladders for the Admiralty, ladders similar to those made by them as fire-escapes, extremely strong, and, when folded, compact. Some months ago, recognising the growing importance of aircraft, they turned their attention to making certain parts of aeroplanes. Their efforts in this direction met with such success that they decided to go more fully into the matter of aircraft construction, and arrangements are being made for making the necessary preparations in their works for the

readily adapt themselves to the new conditions, and they should rapidly take their place amongst the foremost aeronautical firms. From the photographs we reproduce some idea of the extent of the works may be obtained, while in the top right-hand view will be seen some of the parts produced in the works; and from what we saw when on a visit of inspection the other day, the standard of workmanship is quite in keeping with the high standards of modern aircraft practice.



ALL communications in connection with this section should be addressed to the Model Editor, "FLIGHT," 44, St. Martin's Lane, London, W.C. Correspondents are requested to write on one side of the paper only.

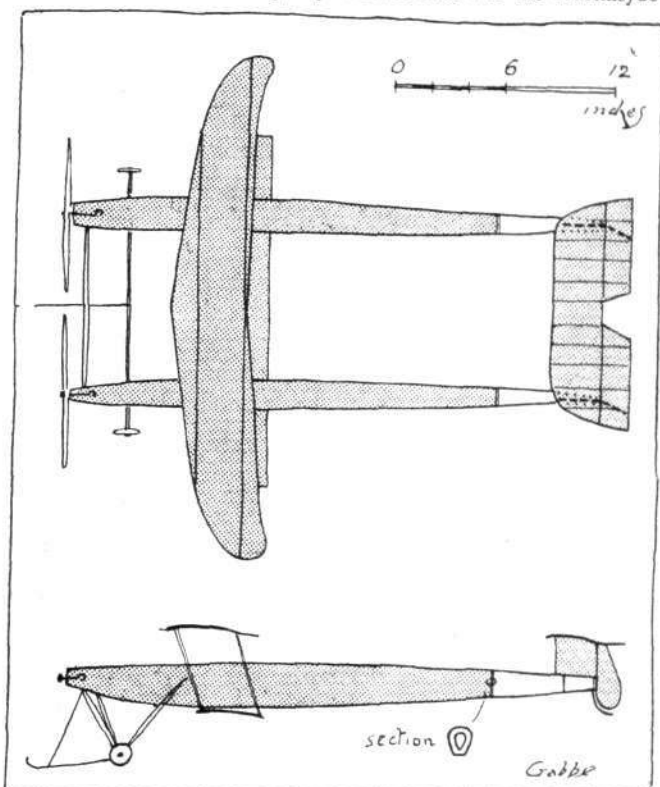
A Twin Tractor Model.

MR. K. WALLACE CRABBE, of St. Kilda, Victoria, Australia, sends the following description of his latest models:—

"I enclose herewith plans of a new type of twin-propeller (tractor) machine which I am building.

"It has movable elevators, twin rudders and skids. Main planes and tail of wire (18 gauge). Main planes have one wooden spar. Fuselage covered only as far as rear former so as to facilitate fixing rubber, six strands of $\frac{1}{4}$ inch to each propeller. Chord of planes 4 inches; of elevators and tail $4\frac{1}{2}$ inches.

"I have had great success with tractors (Taubes and biplanes), but am now also building a part scale model of the Martinsyde



mono.: Span, 34 inches; length, 36 inches; chord of planes, maximum $6\frac{1}{2}$ inches, minimum $4\frac{1}{2}$ inches; weight, about 6 ozs. Ribs fretted out of a two-ply of cedar and spruce, with three webs, and three three-ply formers in the triangular fuselage, driven by a 9-inch tractor.

"Thanking you for all the knowledge, &c., I have obtained from your paper in the last six years."

Re the Public Interest in Models.

Mr. W. E. Evans, the Hon. Sec. of the Paddington and District Aero Clubs, sends the following contribution to the discussion on the above:—

"The opening of a discussion through your columns on the above subject is both opportune and necessary for the future welfare of model aeroplane clubs. I quite agree with your correspondents, Mr. J. V. Winter and 'Scale Model,' that the general public have taken practically no interest in model aeroplaning, and no doubt the sole reason is the lack of similarity between 'flying sticks' and full-sized aeroplanes. I have found that spectators of model flying are surprised that the machines are made to fly for such a long time or for such a long distance, but they are sadly disappointed with the appearance of the 'models.' In fact, the great majority are not 'models' but 'flying machines' which are practical impossibilities as full-sized aeroplanes.

"There will undoubtedly be a great boom in aeroplanes, both full-sized and model, after the war is over, for even America must admit they are having 'some ad.' It will therefore be their own fault if model aeroplane clubs do not turn it to their advantage.

"Now, why is it that most aeromodelists' flying machines are not prototypes of full-sized aeroplanes? I should say the onus lies chiefly with the Council of the Kite and Model Aeroplane Association, who organised competitions for 'flying sticks' instead of models. Members of the various model clubs naturally constructed and developed their flying machines to compete successfully for the prizes they offered. This continued too long with the result that full-sized machines have left the models far behind. A praiseworthy exception must be mentioned, namely, the Reigate and Redhill Model Aeroplane Club. It will be remembered that these enthusiasts exhibited a creditable lot of models at the last Aero Show at Olympia. They were mostly models with built up and covered in fuselages, and had the appearance of the real thing; but, alas, it was against them obtaining the necessary durations to win the prizes at the flying trials which followed. Result, no encouragement to build models.

"Duration has also been idolised by many of the leading aeromodelists, which is anything but conducive to scale model construction.

"The remedy for the present unsatisfactory state of affairs, I think, is for model clubs, and especially the Kite and Model Aeroplane Association, to whom they look for a lead, to organise competitions for models constructed as nearly as practicable to full-sized machines. Competition rules should be framed so as to ensure the machines being models, but not necessarily to scale. To those who are used to obtaining a minute duration or more with their flying stick, the result of their efforts might be rather disappointing at first, but I think it would be a good policy to forget those past durations for a while.

"I shall be most interested to read what other aeromodelists have to say on the above subject."

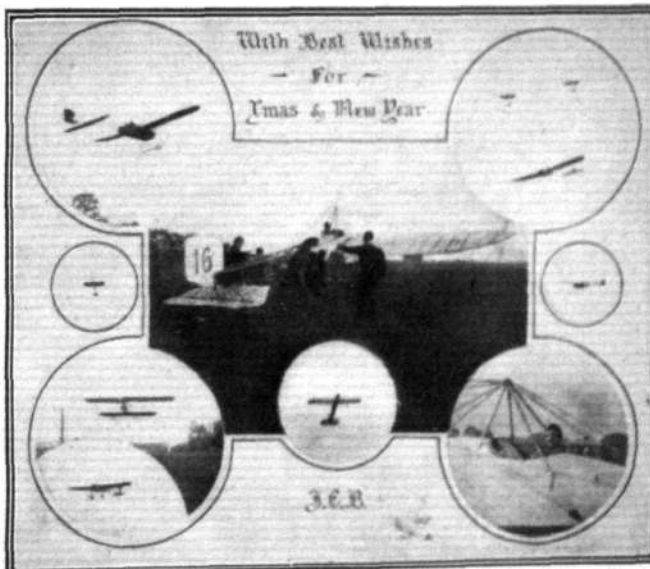


AFFILIATED MODEL CLUBS DIARY AND REPORTS.

Club reports of chief work done are published monthly. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

South-Western Aero Club (373, Brixton Road, S.W.).

Monthly Report.—Flying during the last three months has been very scarce, indoor work being the rule. About the beginning of December, however, Mr. Reid was able to turn out with a new single pusher. Flights of 70-90 yards were obtained, but a considerable amount of tuning up is required. The following are some rough measurements of the model:—Span, 45 ins.; overall length, 45 ins.; weight, 9½ oz.; the rubber motor is 21 ins. long, and drives an 11½ in. propeller, which is mounted between outriggers, immediately behind the main plane. The motor has given durations of just over 30 secs. in bench test a roughly about 500 turns. The tail plane and fin are carried on the outriggers.



A Season's Greeting from Mr. J. C. Baldin, the Hon. Sec. of the Scottish Aeronautical Society (Model Section), showing a few Scottish flying reminiscences.

attached to the body. The chief disadvantage in the model, at present, is the propeller torque, which naturally has more effect than if the machine were a tractor. The result of this is that the model always tends to fly in a pronounced "S" curve. On further trials, however, and a little juggling with the side area, this may be remedied. Members will be glad to hear that Mr. S. T. Smith has joined the Royal Engineers. He is the tenth member of this club to join one of the Services.

UNAFFILIATED CLUBS.

Scottish Ae.S. Model Ae.C. (5, DOUNE QUADRANT, GLASGOW).

Monthly Report.—There has been no flying done during the past month, the only incident of note being an unfortunate accident to one of the club members on service, 1st Mechanic H. M. Hill, Royal Flying Corps. The accident occurred near London on the 19th inst., the machine (a Farman of the elevator type, judging from photographs in the daily papers) being forced to land owing to engine trouble, crashing into a railway signal post, which was completely bent in two. The pilot escaped with slight injuries, but Mr. Hill was rendered unconscious, being badly cut about the face and hands. He is also suffering from slight concussion, but is progressing very favourably. May he have a complete and speedy recovery. 2nd Mechanic A. P. Mackim, R.F.C., might kindly forward his address to the secretary.



H.P. Works Dinner and Concert.

"ALL Work and NO Play Makes Jack a Dull Boy," and after the busy times they have been experiencing it was not surprising that the dinner and concert given to the employés of Handley Page Ltd., on Saturday, December 18th, 1915, in the King's Hall at the Holborn Restaurant, was thoroughly enjoyed and proved a great success. Mr. F. Handley Page presided, and about 550 people were present. The toast of "Success to the Old Firm" was proposed by Mr. C. W. Meredith, the Works Manager, who has been connected with the firm since 1909, and was responded to by Mr. F. Handley Page. The dinner was followed by an excellent programme of musical and other entertainments, including some clever sleight of hand work by Mr. Arthur Besoni. Emphasising the excellent relations existing between the firm and its staff was a surprise item, which took the form of a presentation to both Mr. Handley Page and Mr. Meredith made on behalf of the employés by Mr. Stapleton, chairman of the Men's Social Club.

Whitehead Workers' Annual Dinner.

THE First Annual Dinner of the Whitehead Co. was held at the Castle Rooms, Richmond, on December 17th, and proved a great success. After the dinner Mr. J. A. Whitehead, who presided, was presented by Mr. Ward, the Works Manager, with a silver salver and tea service which had been subscribed for by the workpeople as a wedding present to their chief. In accepting the gift, Mr. Whitehead referred to the loyal assistance and tenacity of purpose of the staff which had enabled them to do what they had done in such a short time. He thanked them for their beautiful present, which came as quite a surprise to him. He also spoke in the highest terms of the valuable assistance he had received from Mr. Ward in establishing and organising the new works.

Mr. Ward was also presented with an umbrella by the employees. Musical items were contributed by the Misses Warner, Mr. Reginald Whitehead, Mr. Chandler and others, and the band of the Queen Victoria Rifles played during the dinner.

1916.

"Per ardua ad astra."

ONE more leaf from the future, a page to the past
In Eternity's record of life ;
A page turned in blackness, with skies overcast,
With nation 'gainst nation, with peoples aghast
At Ambition's foul plunge into strife.

But you—eyes of the Army ! You—eyes of the Fleet !
Your acts shine in letters that flame
From the scroll, that blaze like pure gold from the sheet
Where, but shortly, Destiny writes the defeat
And the enemy's undying shame.

For the dawn now grows bright after flame-pitted night,
And "The Day," with its promise, draws near
When, thrown to the ground by invincible might,
Hurled back shattered, pursued in ignoble flight,
He shall feel the grim grip of fear.

And the monster who now unsuccessfully copes
With your skill, which his effort debars?
Your planes, flying high o'er the slime where he gropes,
Shall triumphantly carry winged death to his hopes
And the fame of your deeds to the stars.

DOUGLAS A. SMART.

SPECIAL NOTICE.

"FLIGHT" will in the future be One Penny Weekly, and will be published every Thursday (for Friday). All copy, Editorial or Advertisement, must therefore reach the Office, 44, St. Martin's Lane, W.C., each week not later than first post Tuesday morning.

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End of Volume VII and Seventh Year of publication.

